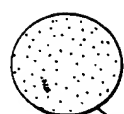


FIG. 1

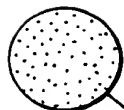


[SEQ. ID NO: 3]

X-C-C-T-T-G-A-G-A-T-T-T-C-C-C-T-C
5' 3'

G-G-A-A-C-T-C-T-A-A-A-G-G-A-G-X
3' 5'

[SEQ. ID NO: 4]



X-C-C-T-T-G-A-G-A-T-T-T-C-C-C-T-C

G-G-A-A-C-T-C-T-A-A-A-G-G-A-G-X

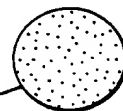


FIG. 2

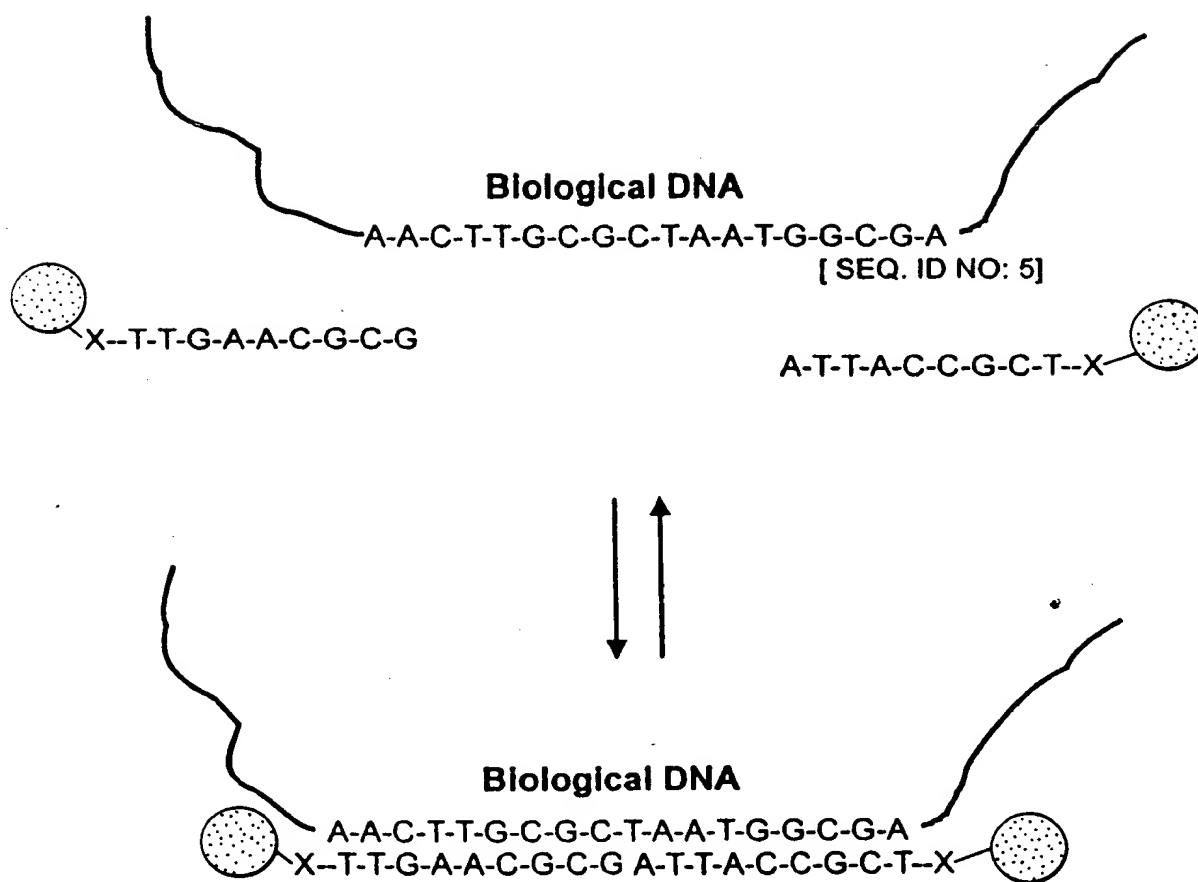


FIG. 3

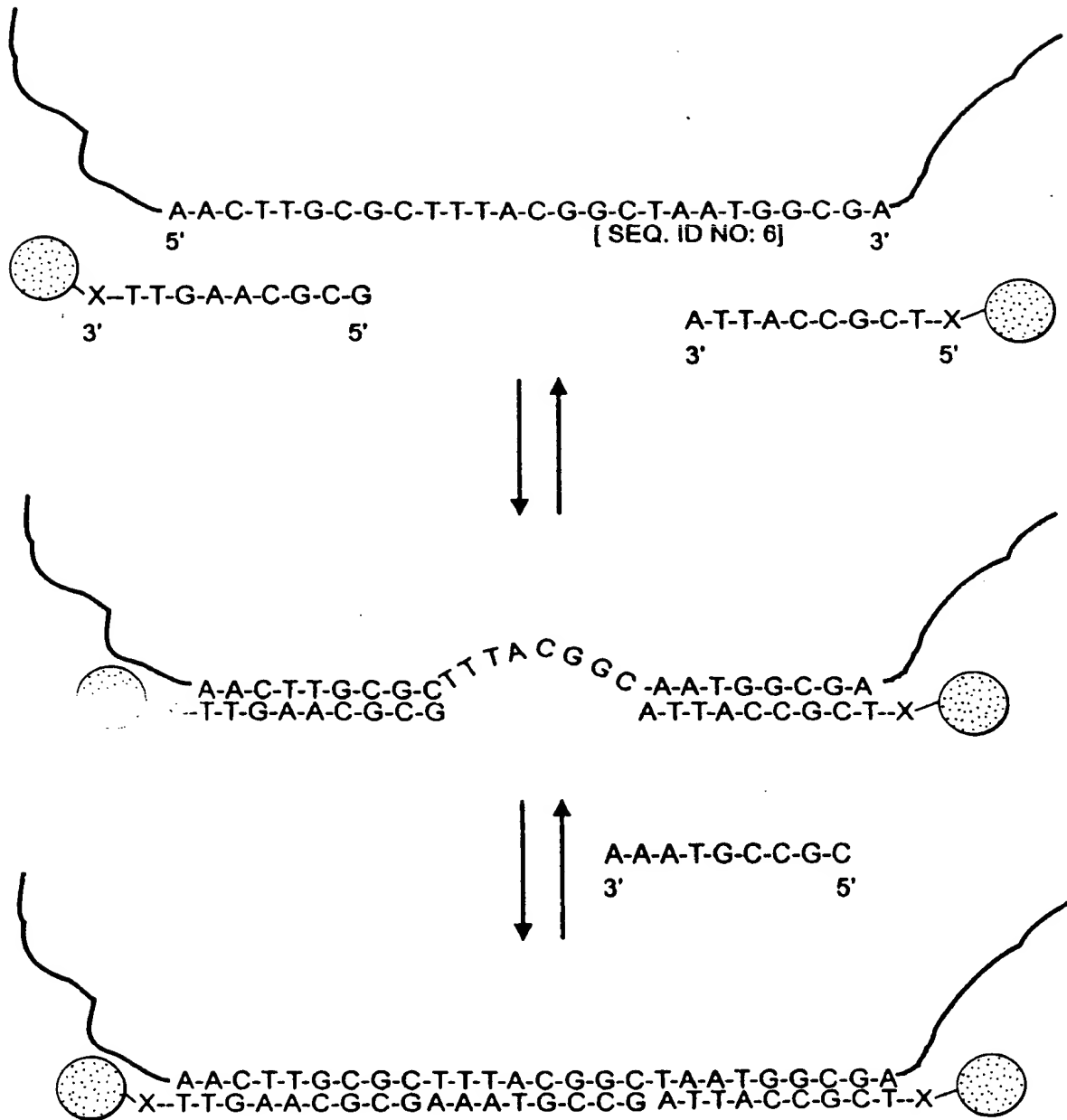


FIG. 4 5' A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G 3' Linking oligonucleotide
 [SEQ. ID NO: 2] A-T-A-T-G-C-G-C-G-A-T-C-T-C-A-G-C-A-A-A 5'
 [SEQ. ID NO: 1]

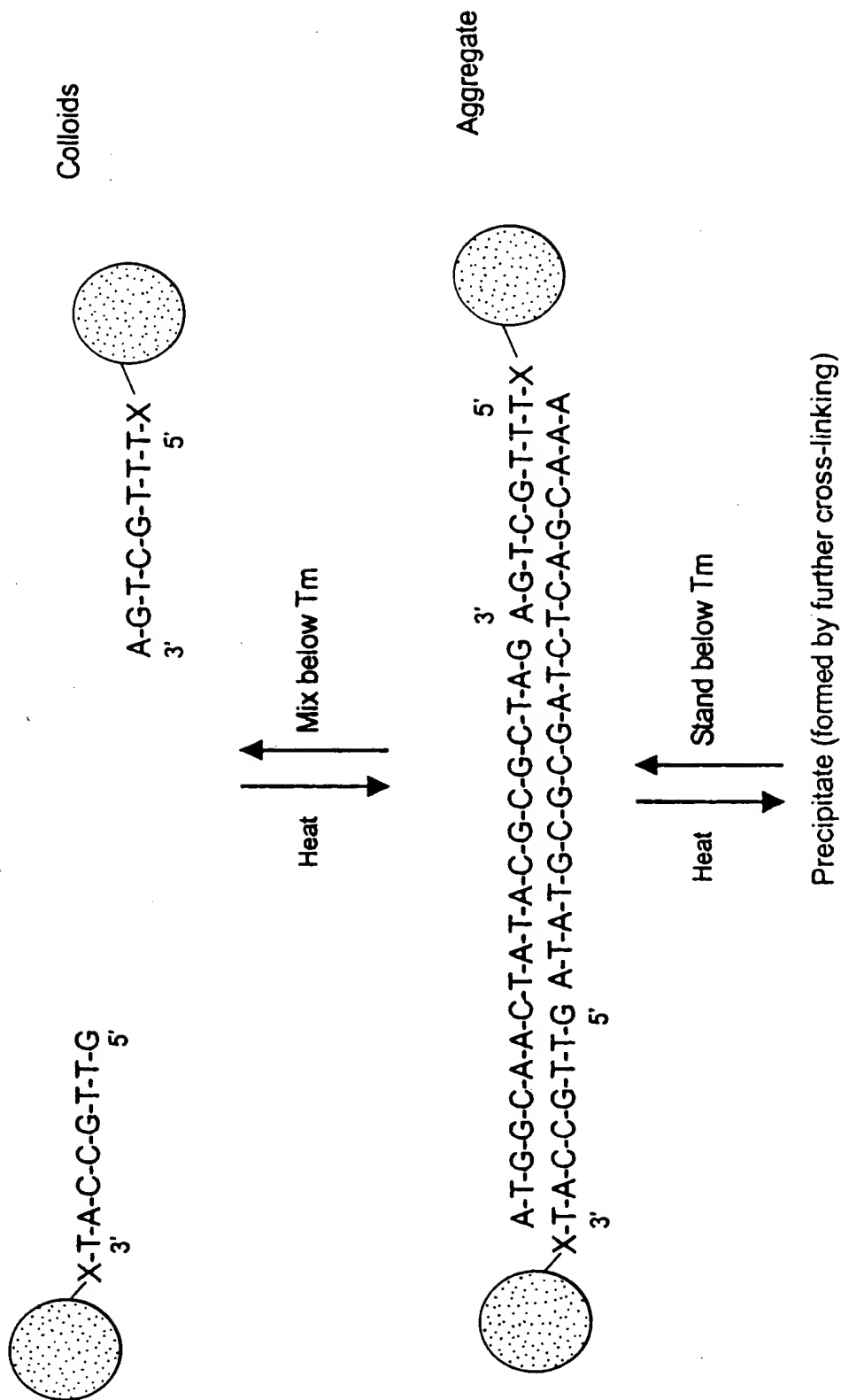


FIG. 5



A vertical, narrow, rectangular object, possibly a piece of wood or metal, with a textured surface and a small, dark, circular feature near the top.



FIG. 7

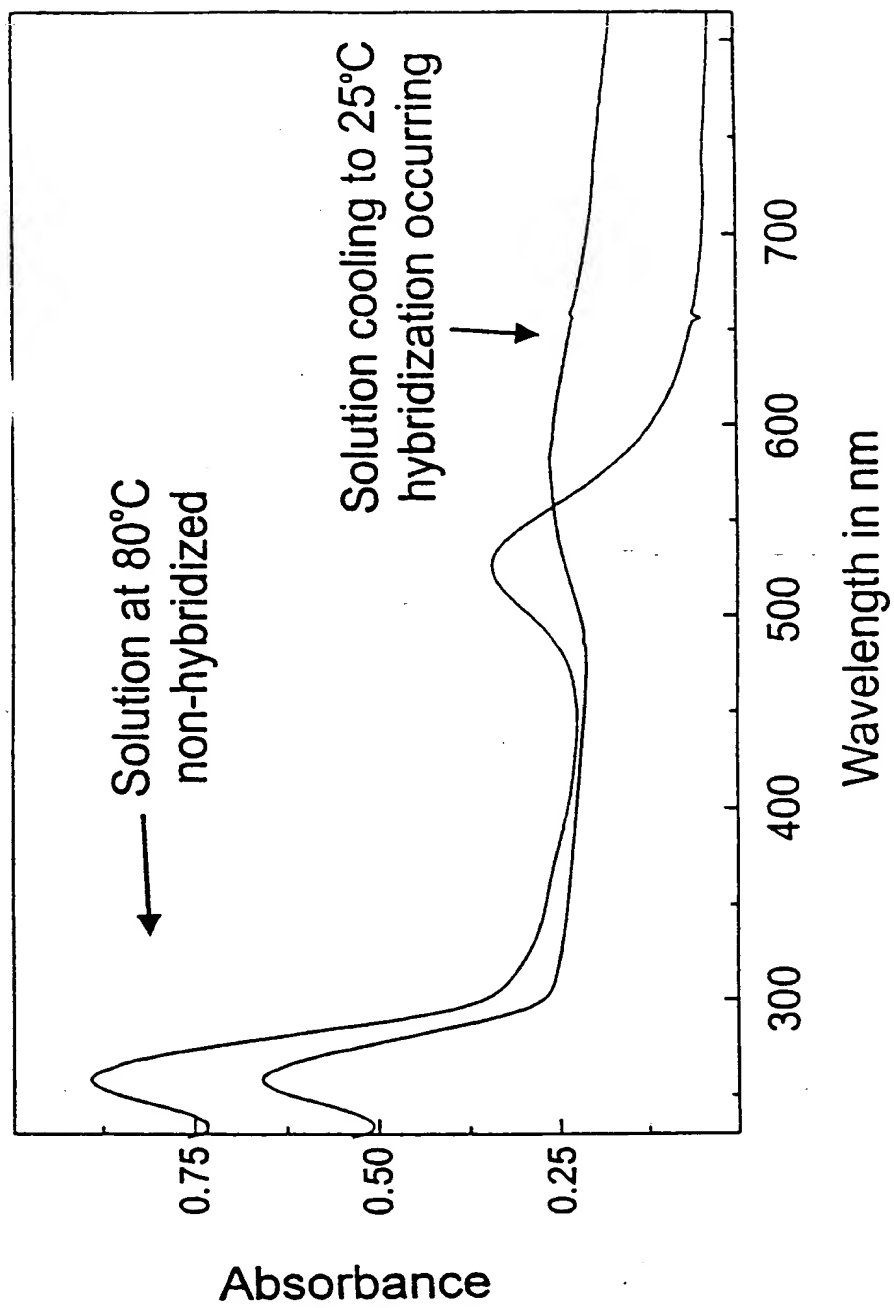


FIG. 8B

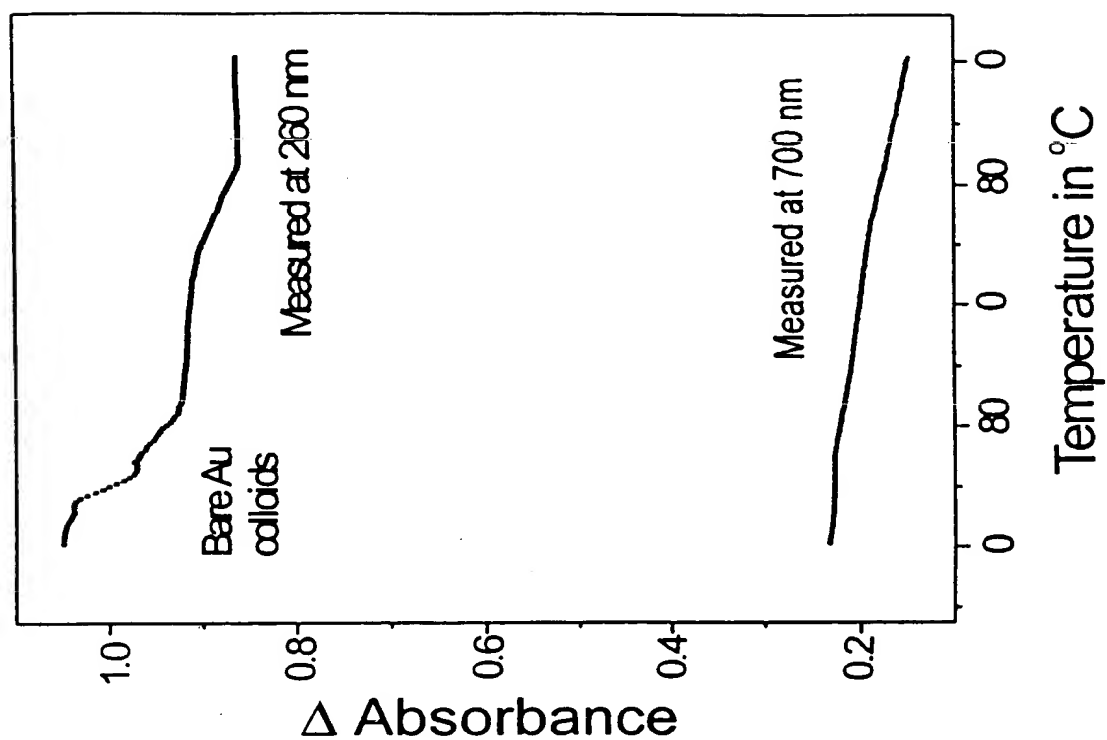
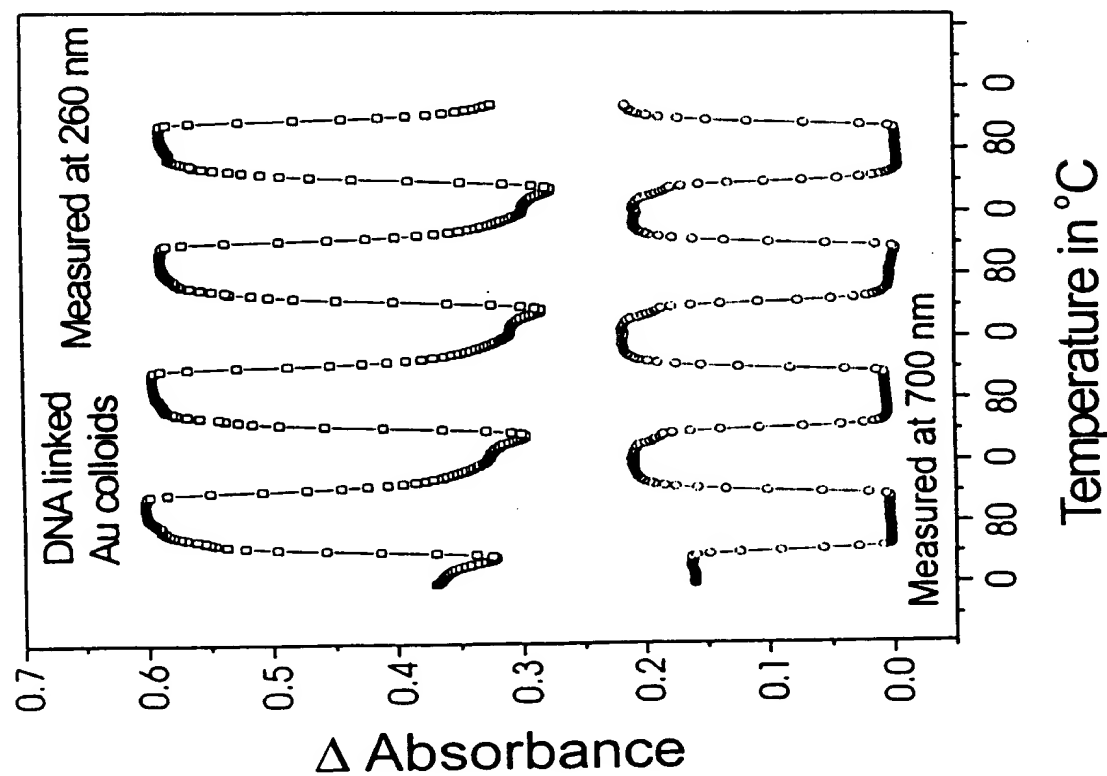


FIG. 8A



9/63

FIG. 9A

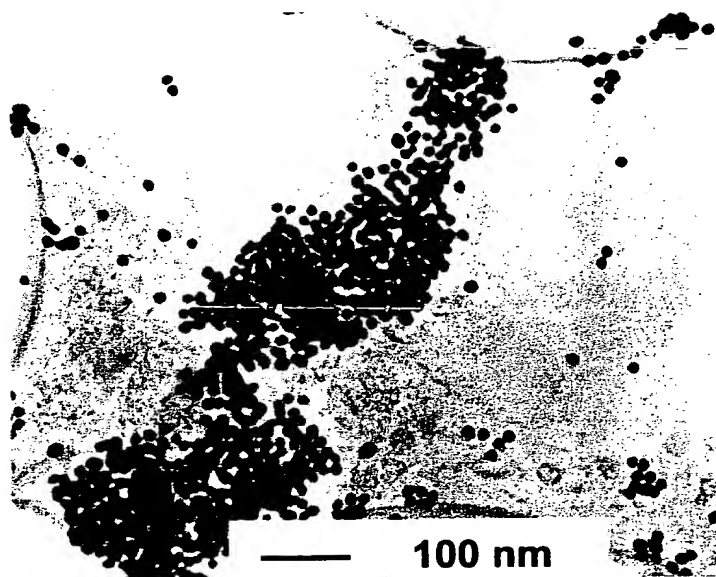
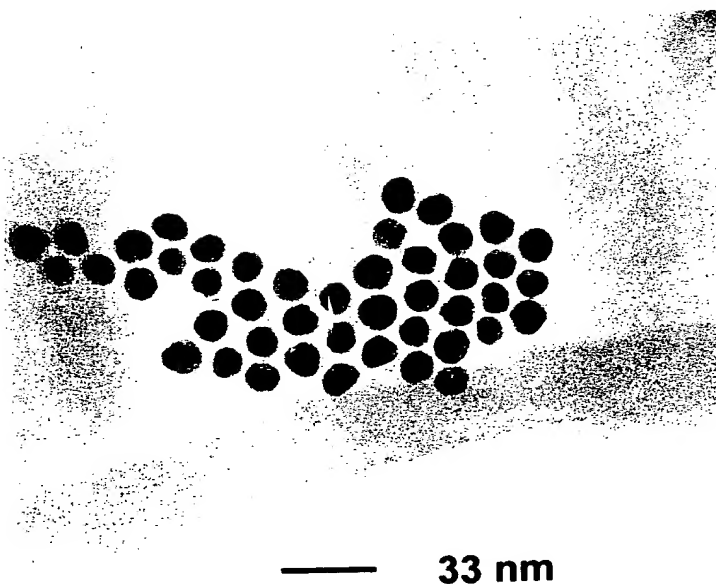


FIG. 9B



09277-081001

FIG. 10

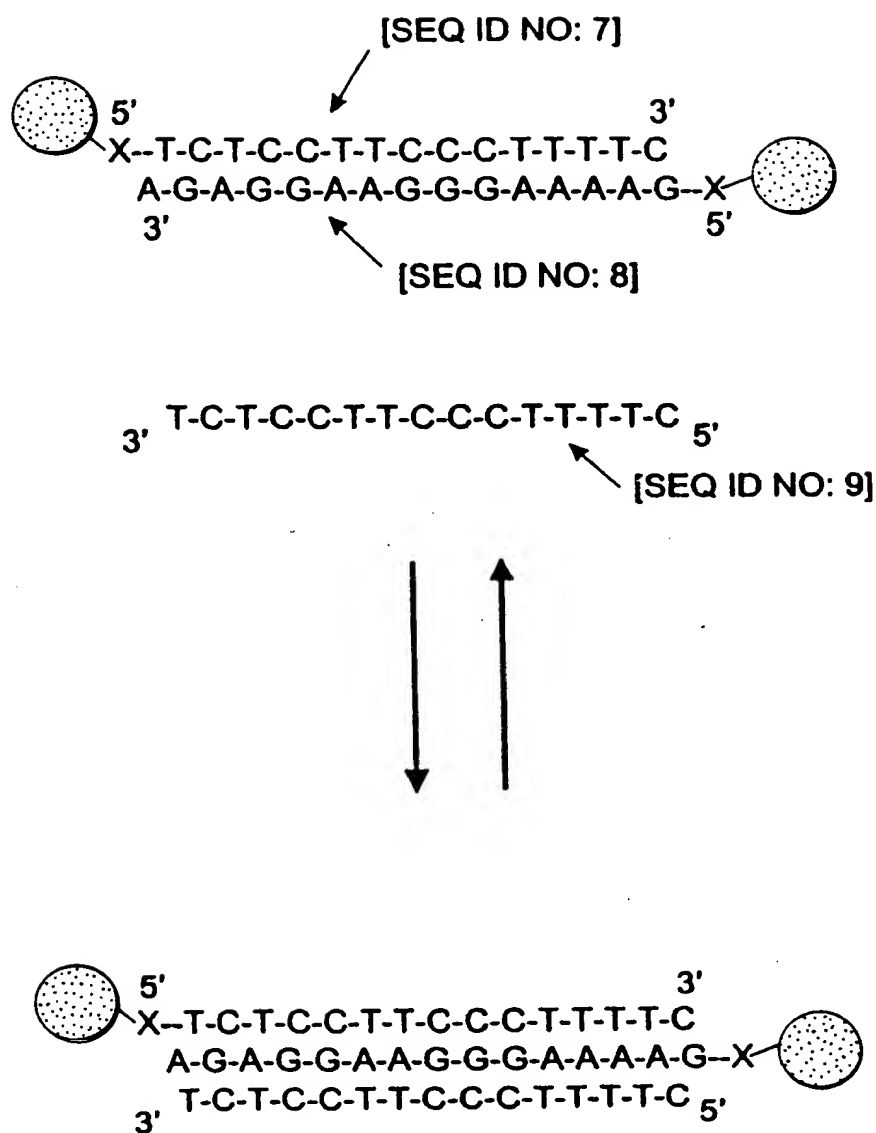
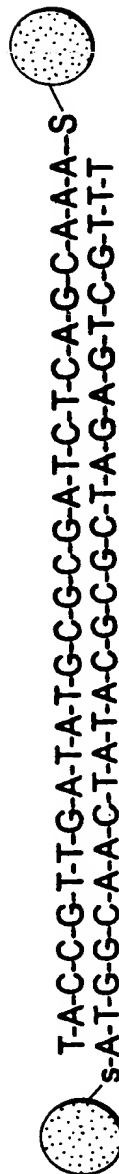
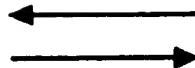
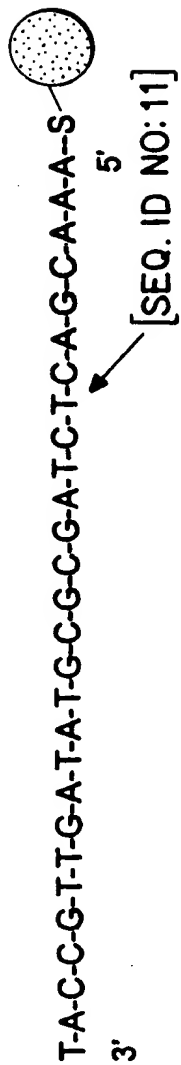
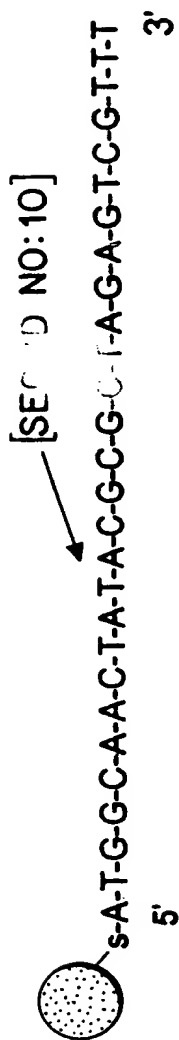


FIG. II



Complementary Target

1

2

3

Probes without Target

1

2

FIG. 12C

1

2

4

FIG. 12D

1

2

5

FIG. 12E

1

2

6

FIG. 12F

1

2

7

-[SEQ. ID NO:18]

FIG. 13A

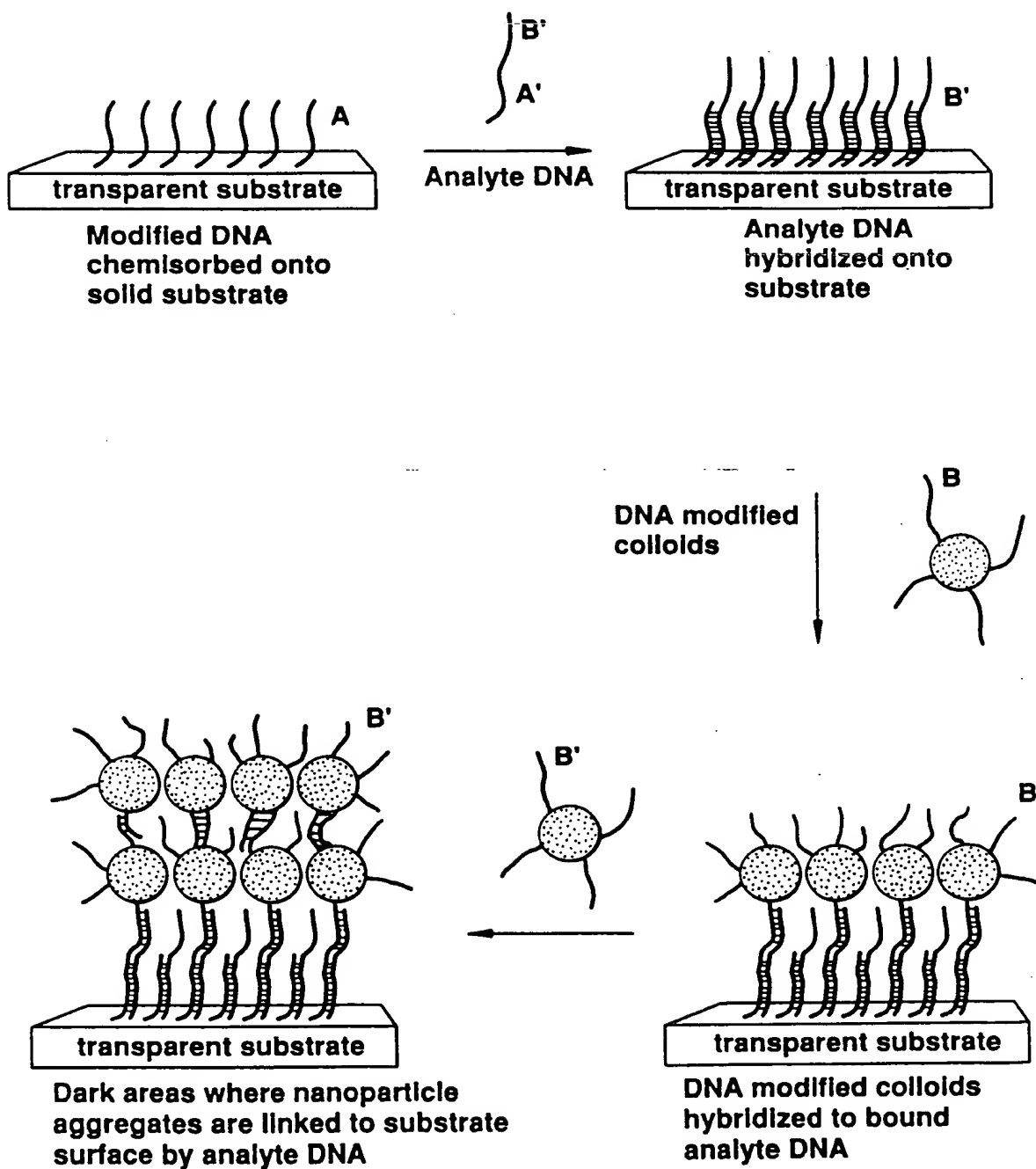


FIG. 13B

14/63

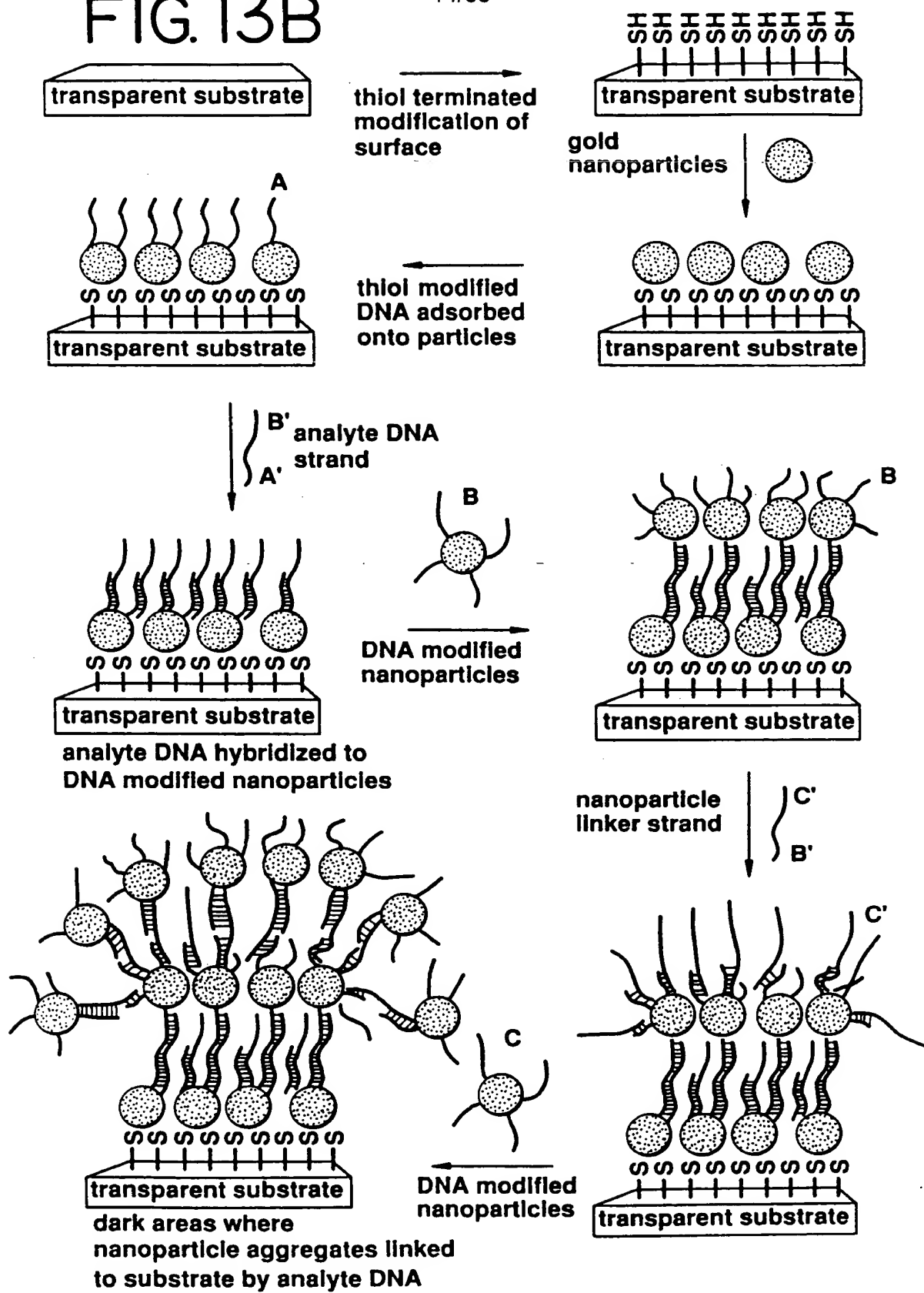


FIG. 14A

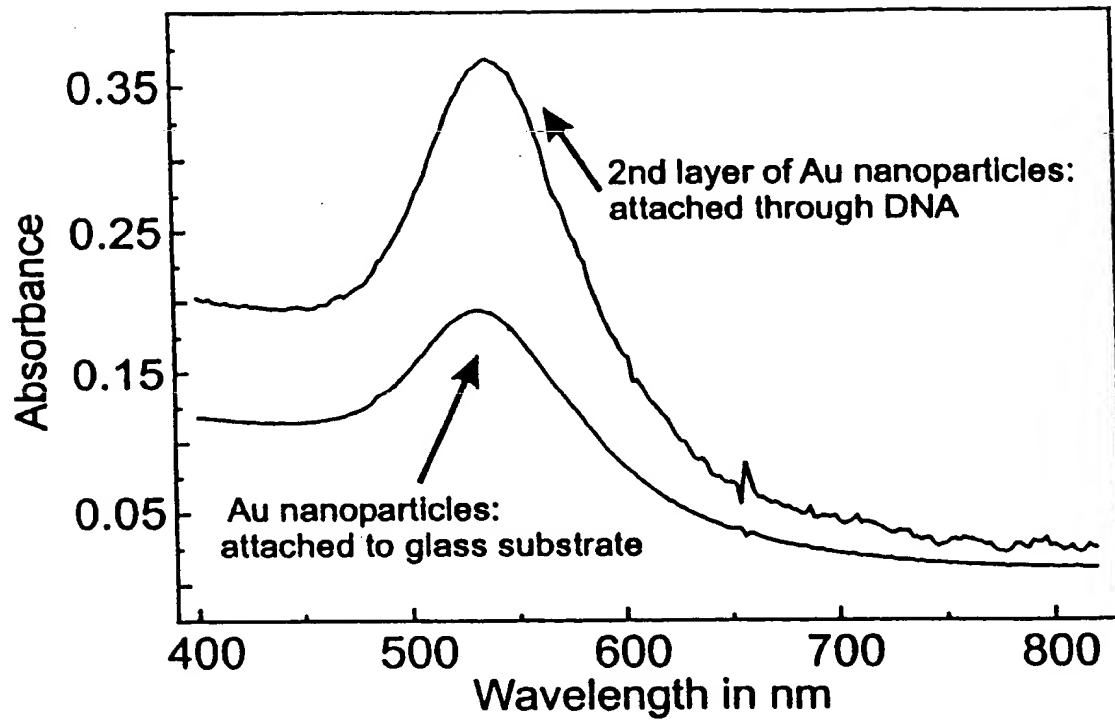


FIG. 14B

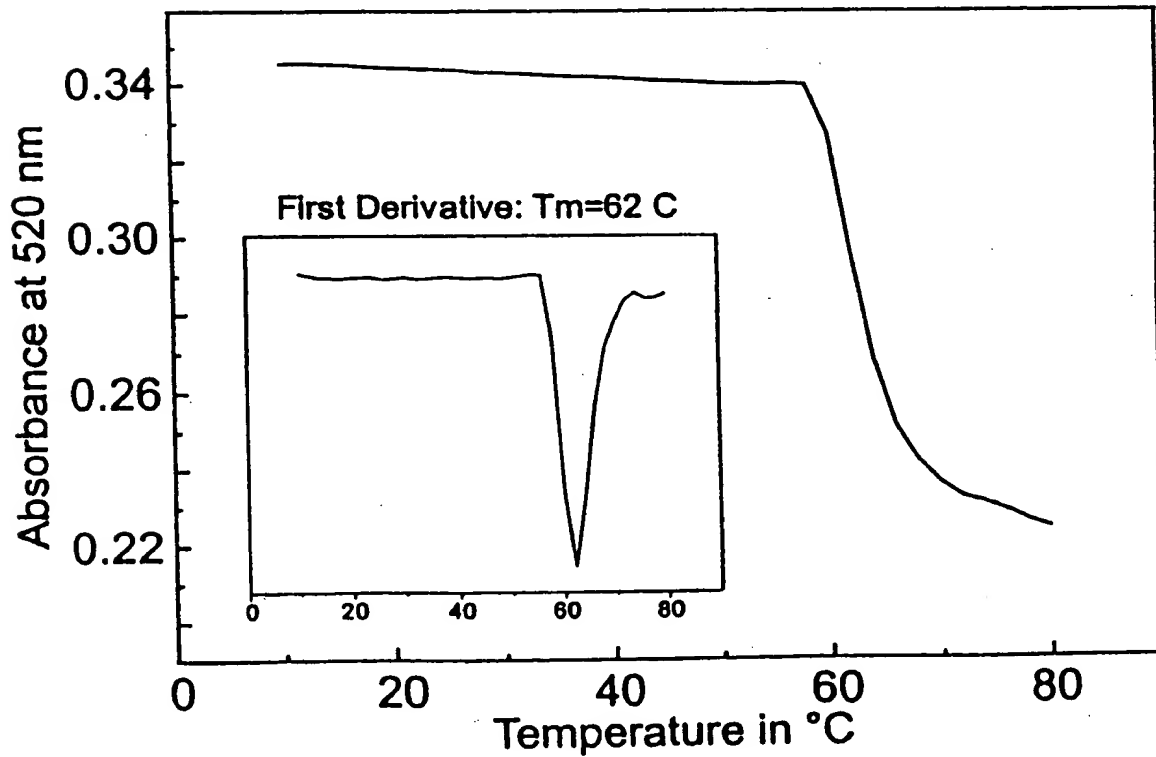


FIG. 15A

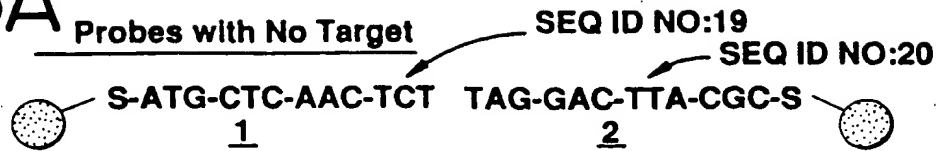


FIG. 15B

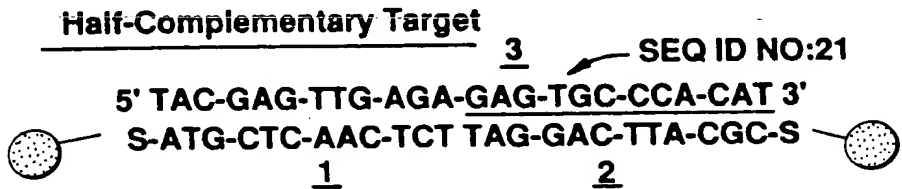


FIG. 15C

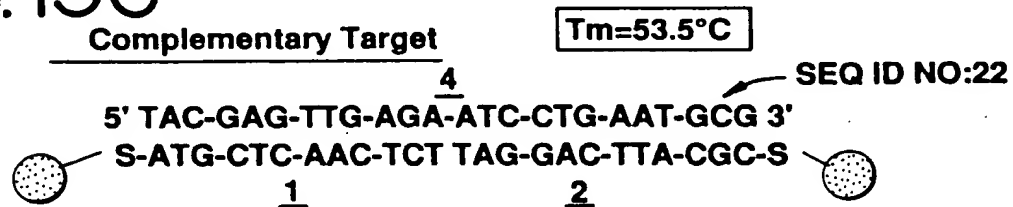


FIG. 15D

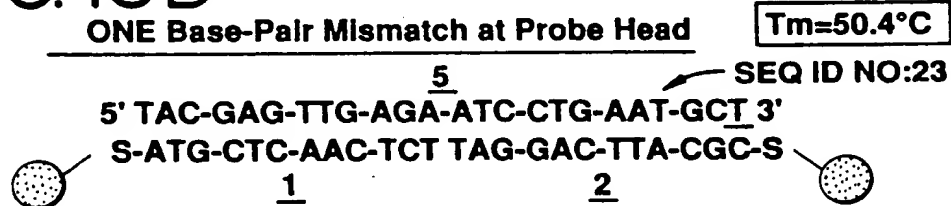


FIG. 15E

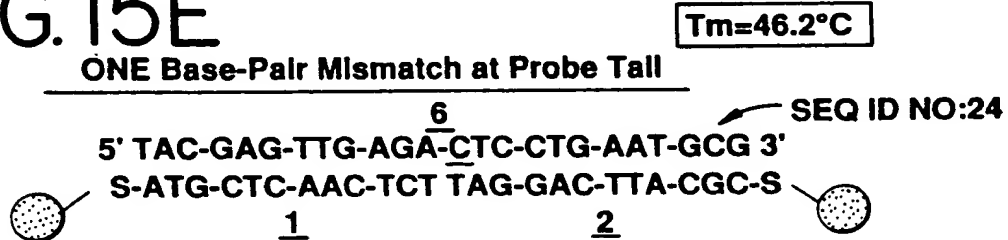


FIG. 15F

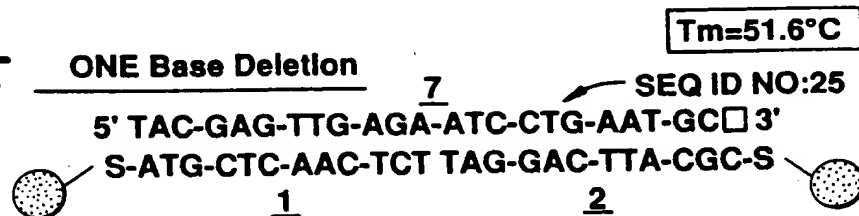
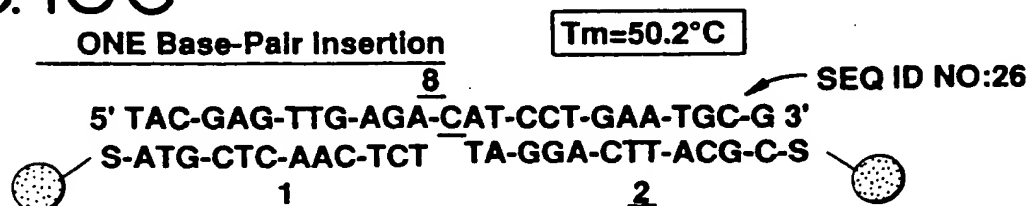


FIG. 15G



24 Base Template

FIG. 16A

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —
 1 2

FIG. 16B

48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —
 1 2

FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S —
 1 2

FIG. 17A

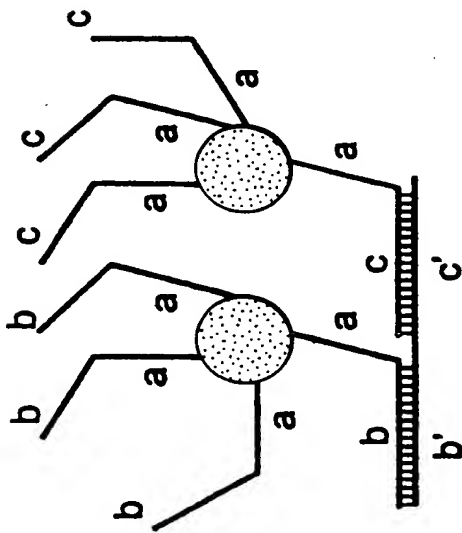


FIG. 17B

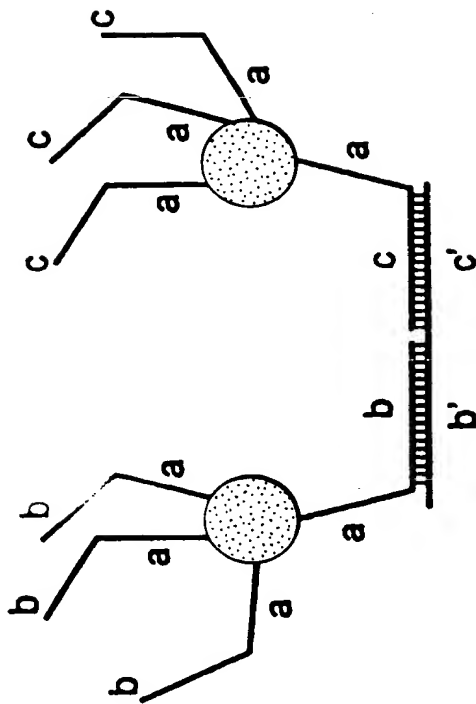


FIG. 17C

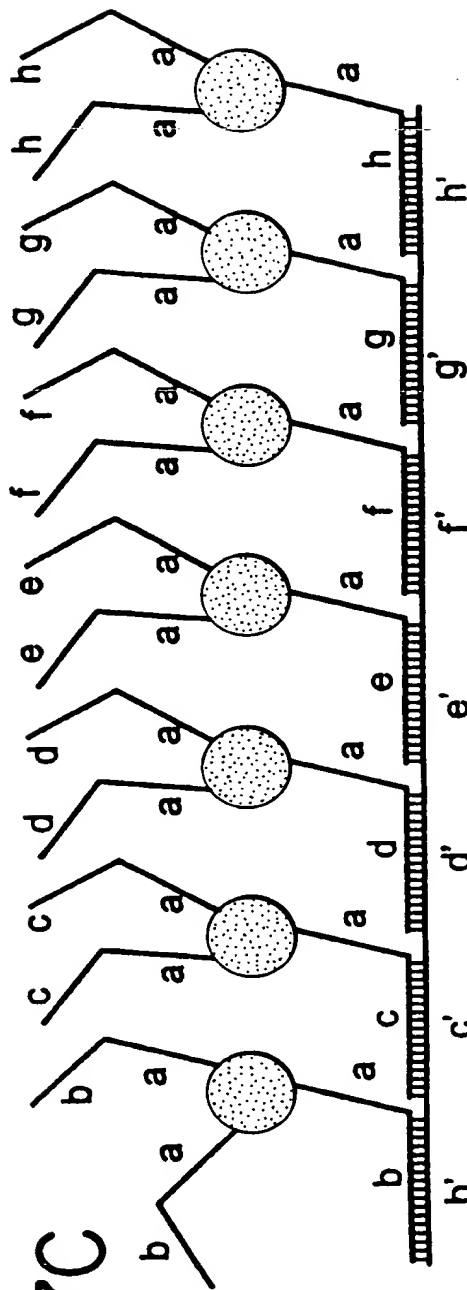


FIG. 17D

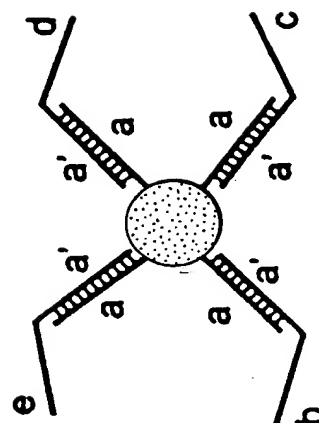
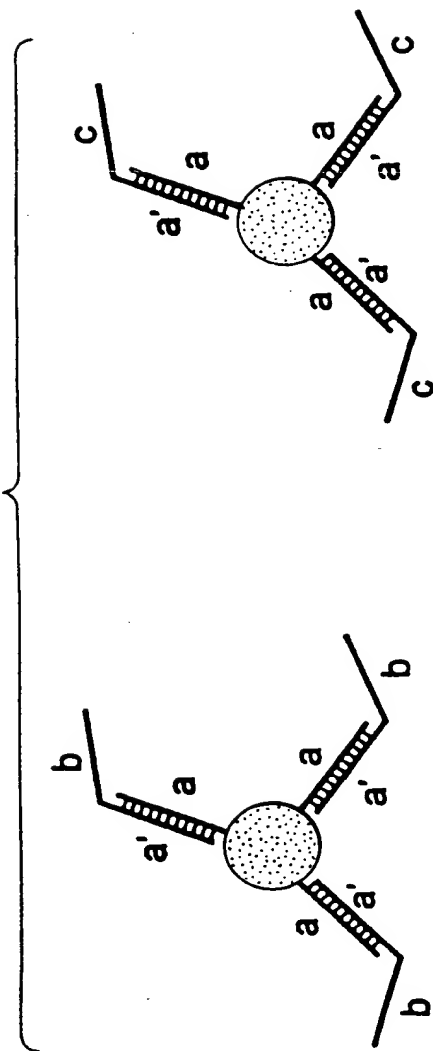


FIG. 17E

FIG. 18

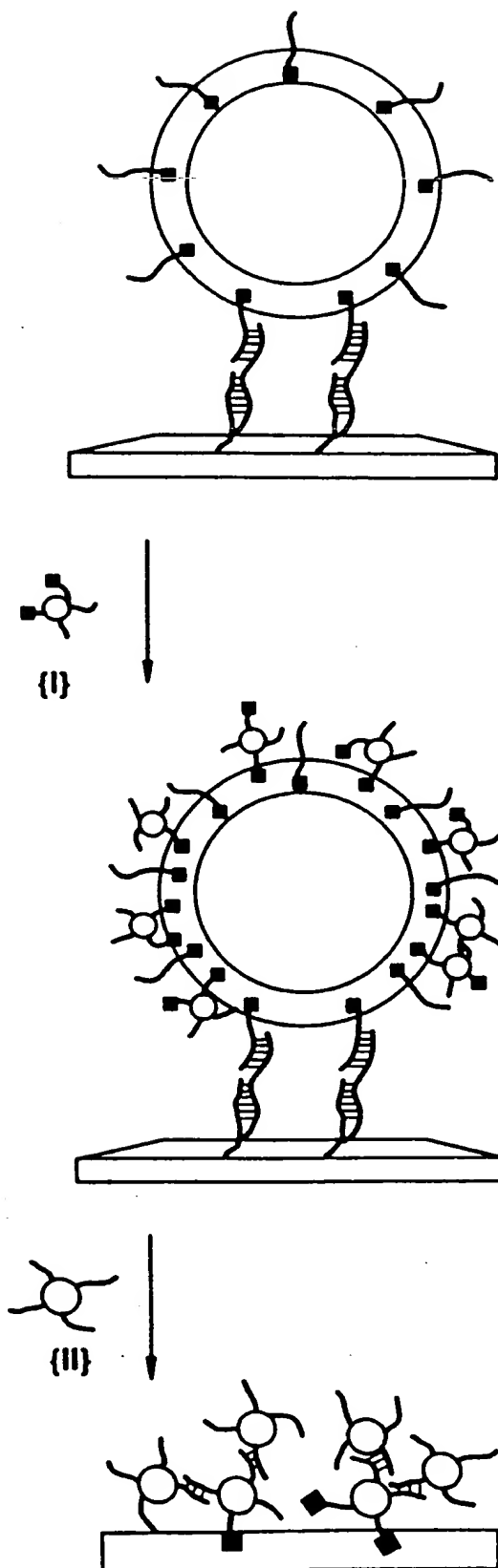


FIG. 19A

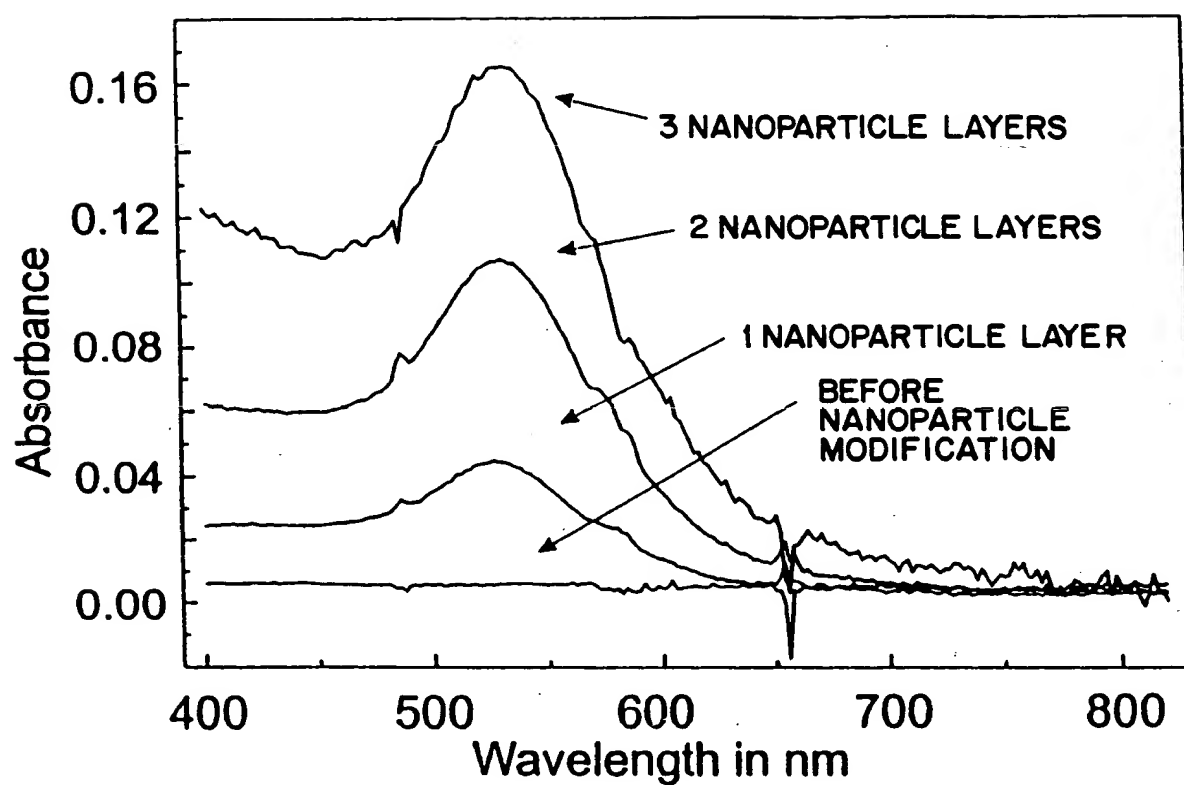
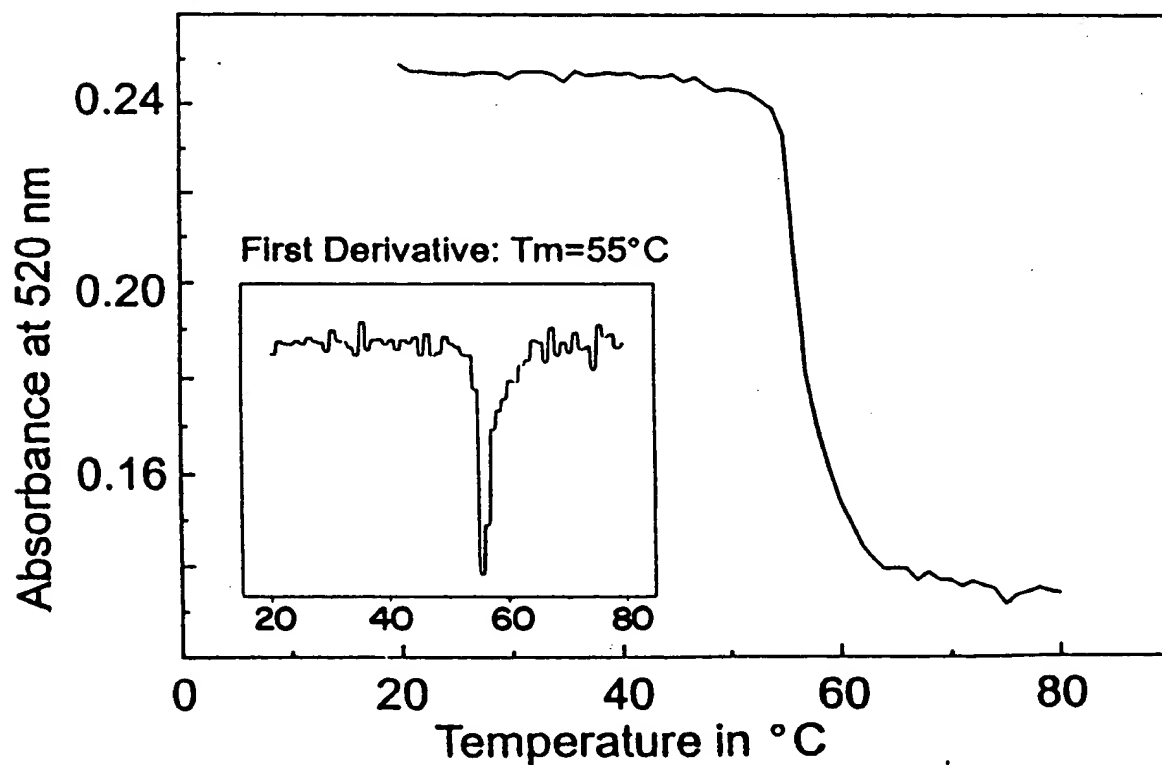


FIG. 19B



22/63

FIG. 20A

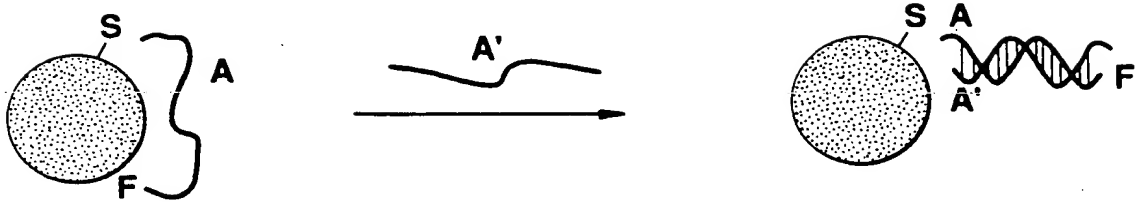


FIG. 20B

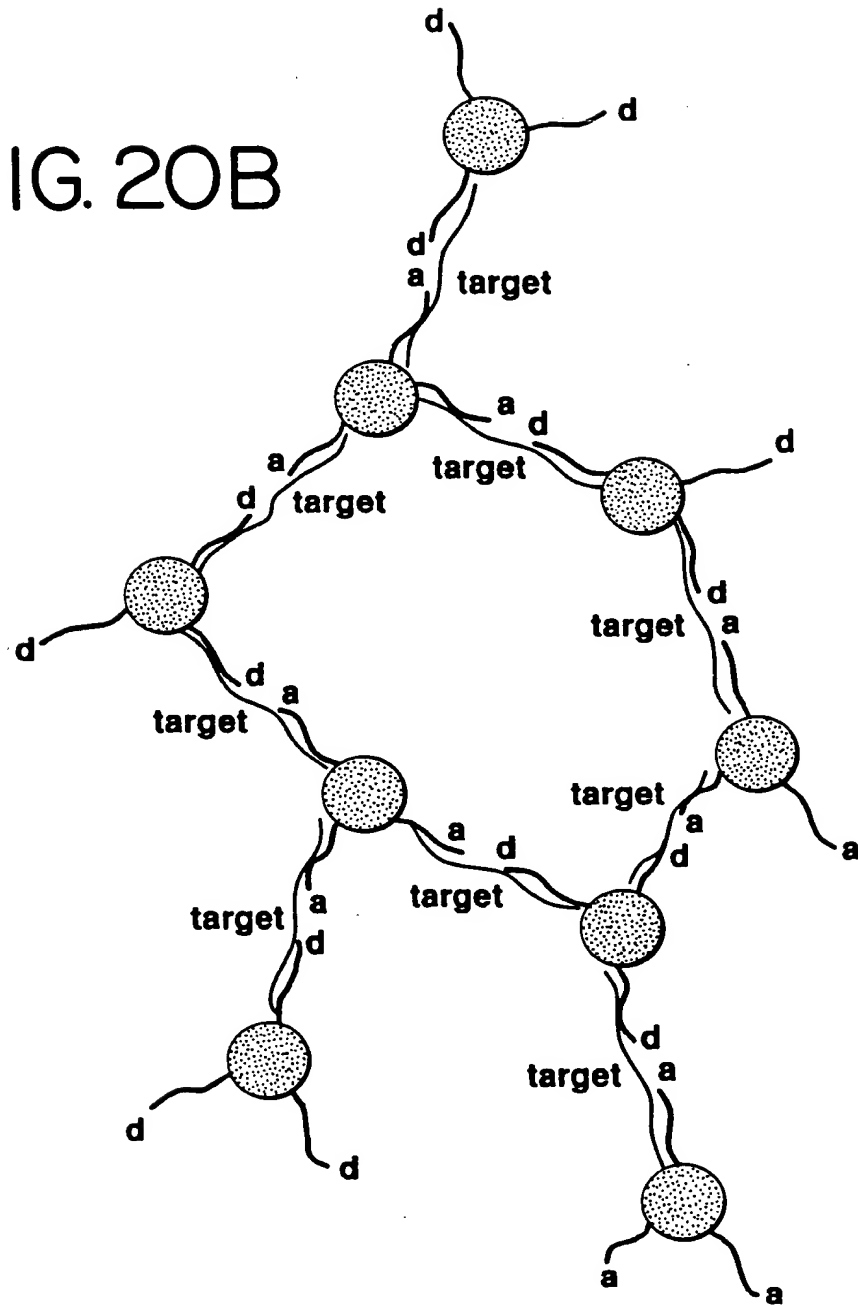


FIG. 20B

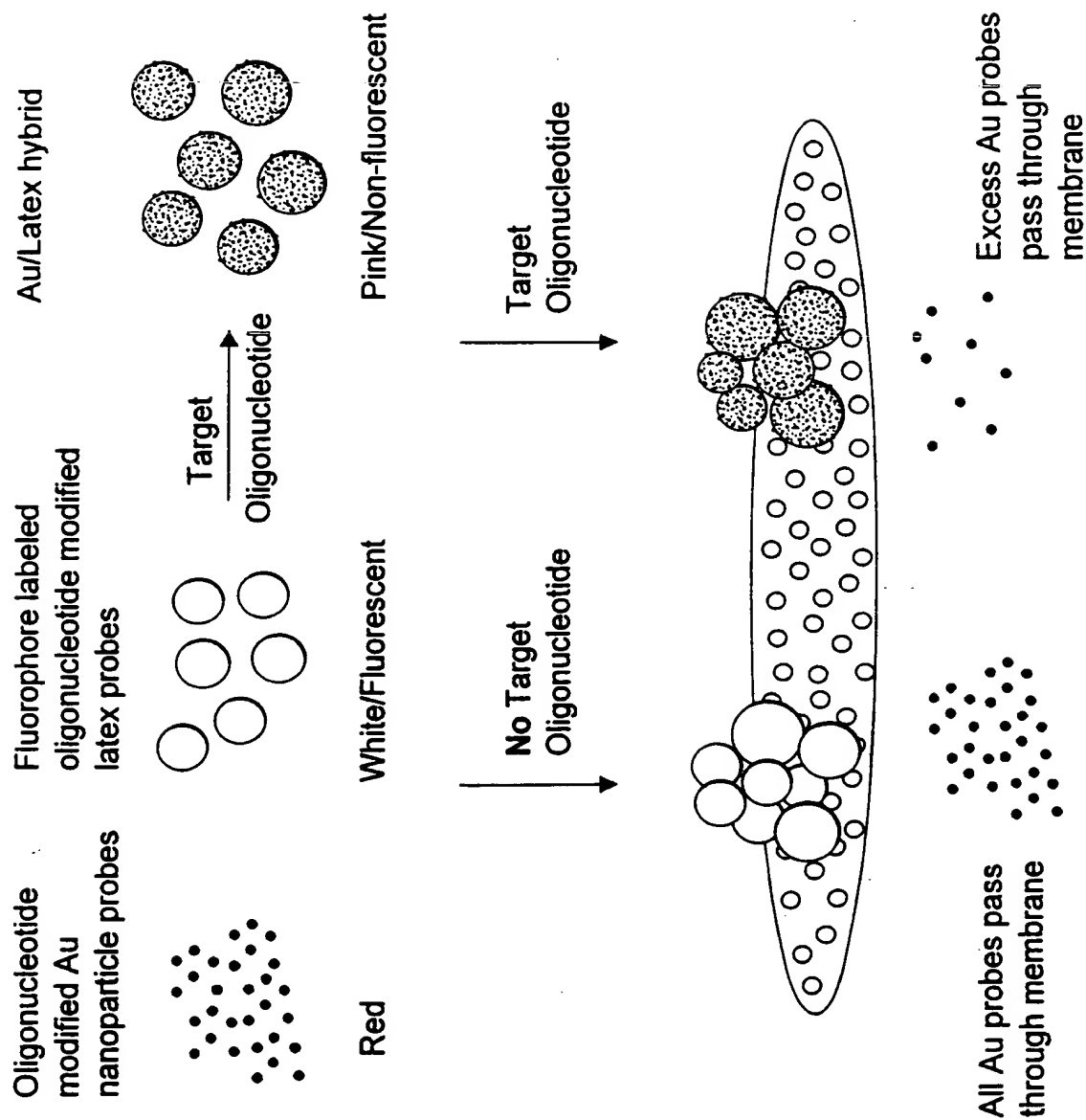
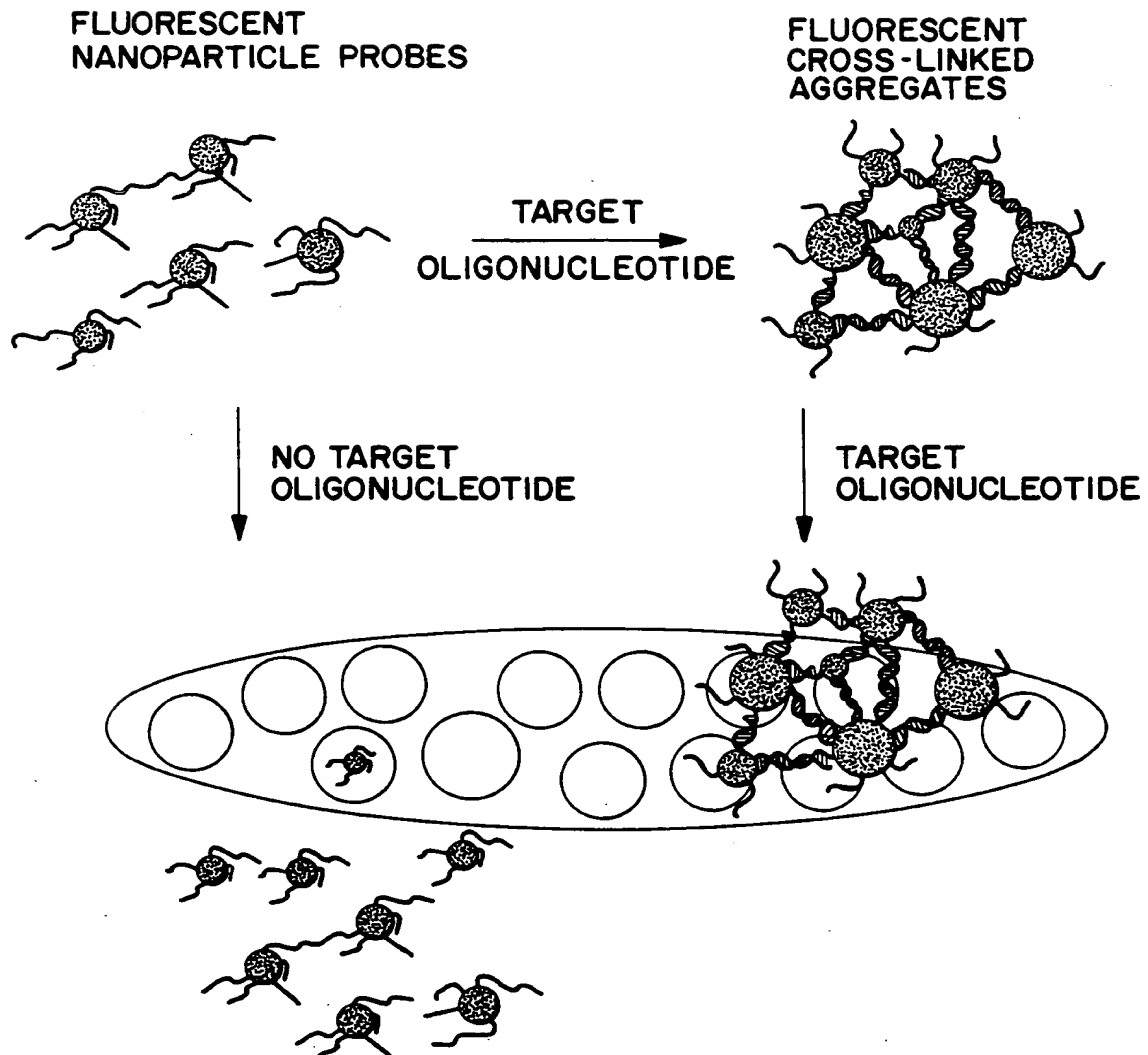


FIG. 22



THE FLUORESCENT NANOPARTICLE
PROBES PASS THROUGH THE
MEMBRANE

THE FLUORESCENT
CROSS-LINKED AGGREGATES
ARE RETAINED BY THE
MEMBRANE

FIG. 23

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]

3' CTC CCT AAT AAC AAT — 

[SEQ ID NO:37]

3' TTA TAA CTA TTC CTA — 

[SEQ ID NO:38]

Oligonucleotide-Nanoparticle Probes

Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT
3' A TCT CTT CAT TAA TTA AGC AGT TGT
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA

[SEQ ID NO:39]

[SEQ ID NO:40]

[SEQ ID NO:41]

[SEQ ID NO:42]

FIG. 23

FIG. 24

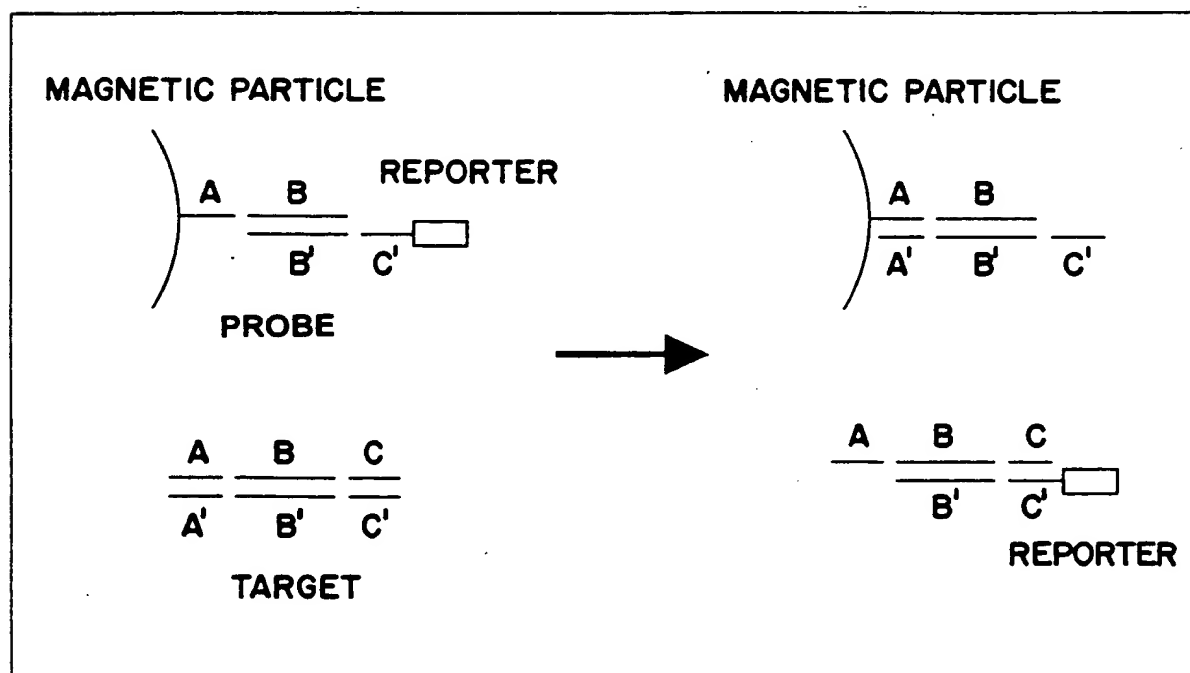
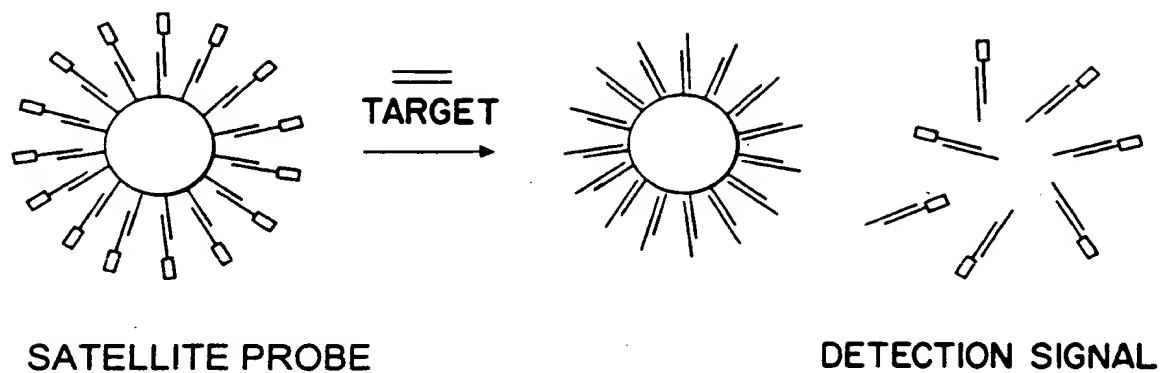



FIG. 24

FIG. 25A

1.  (TARGET)

2.

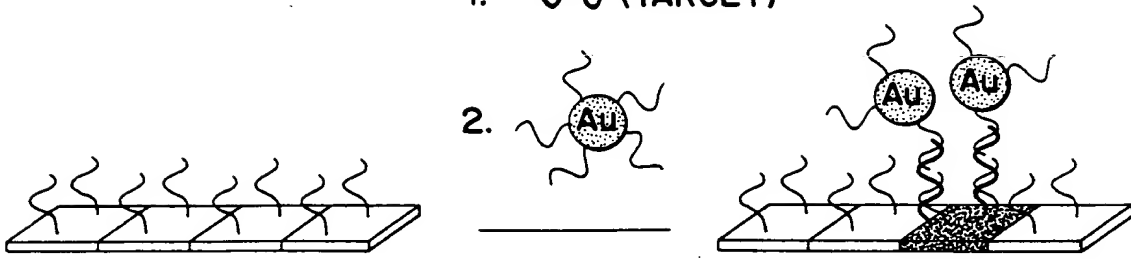


FIG. 25B

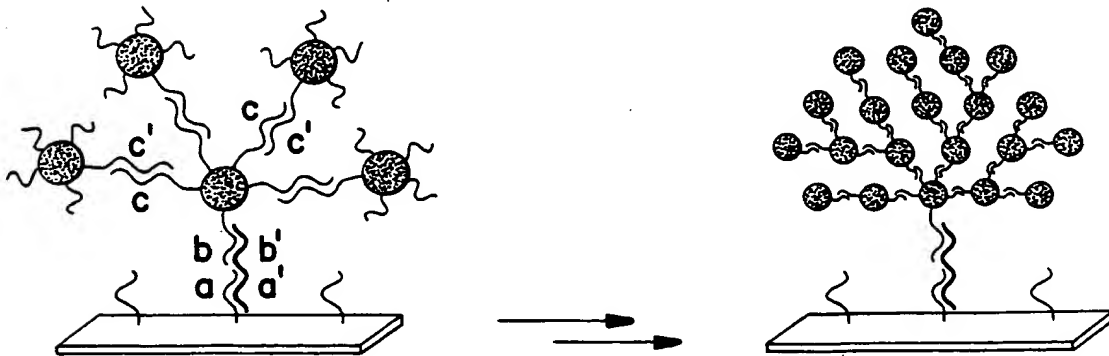
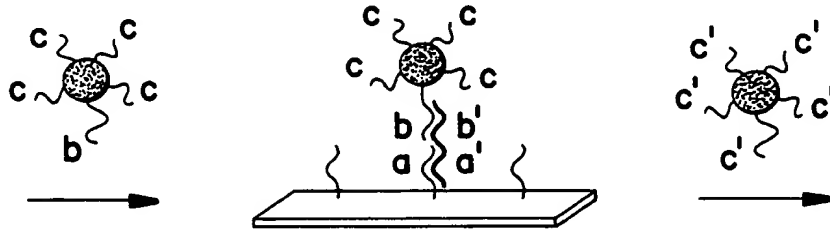
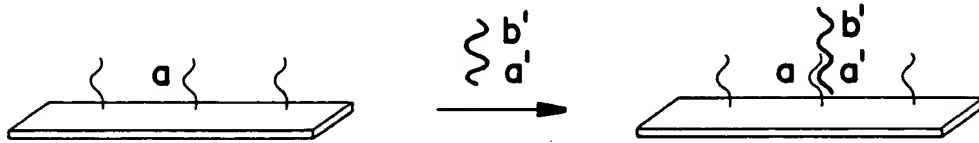


FIG. 26A

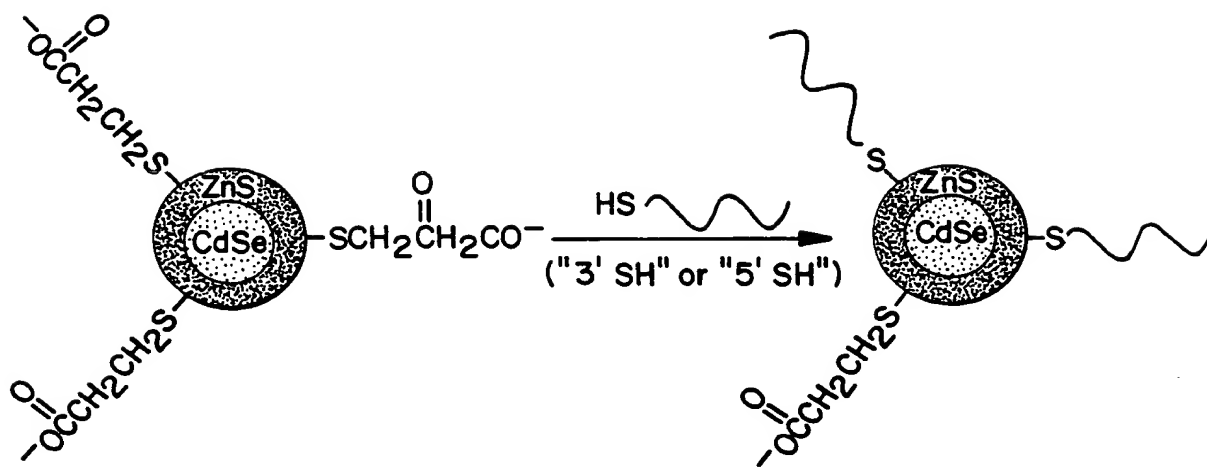


FIG. 26B

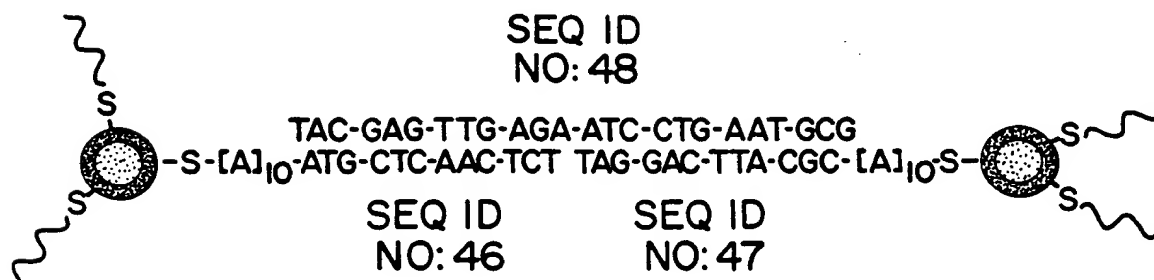


FIG. 27A

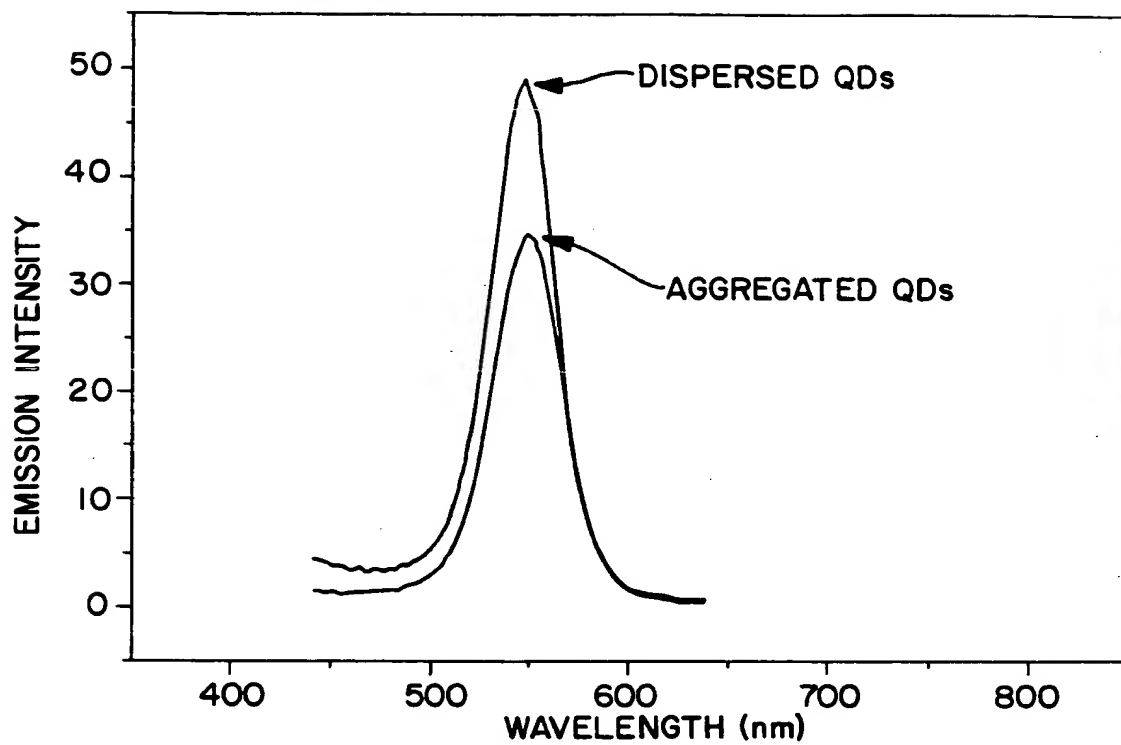


FIG. 27B

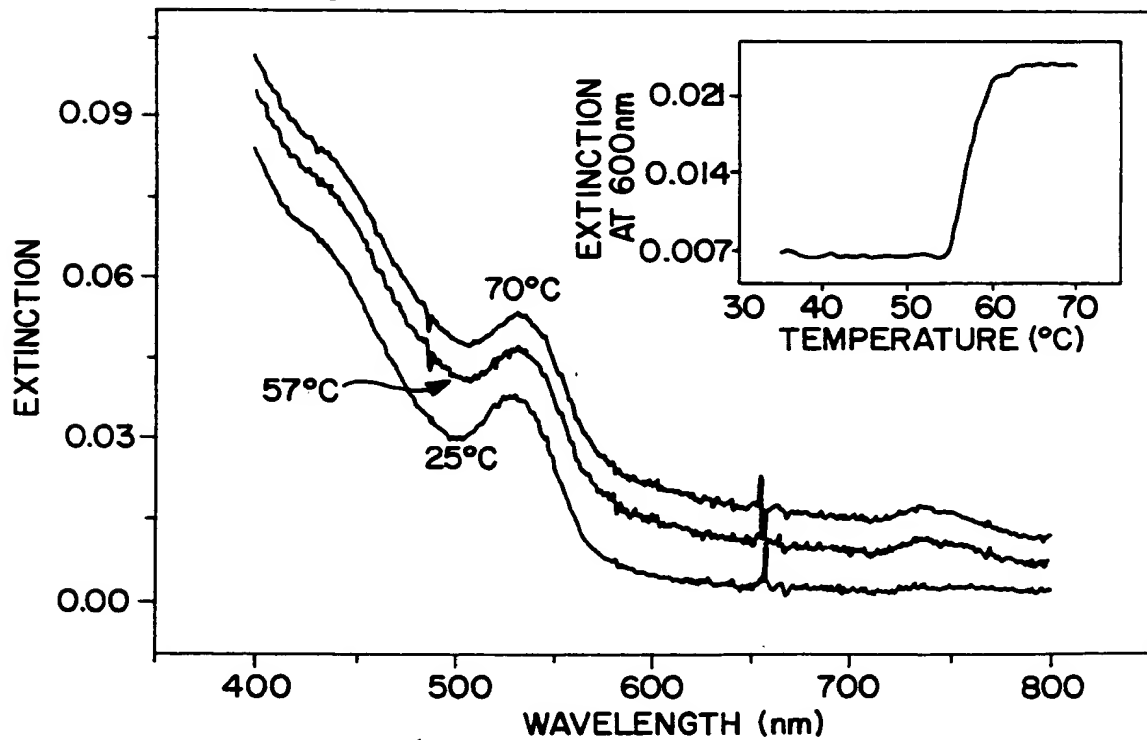


FIG. 27C

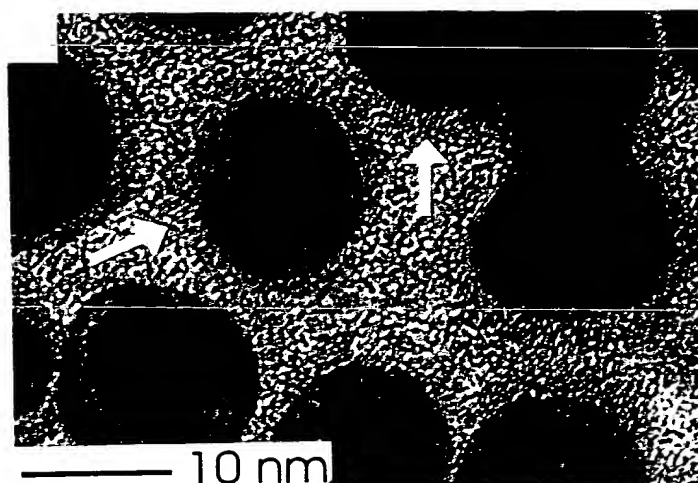


FIG. 27D

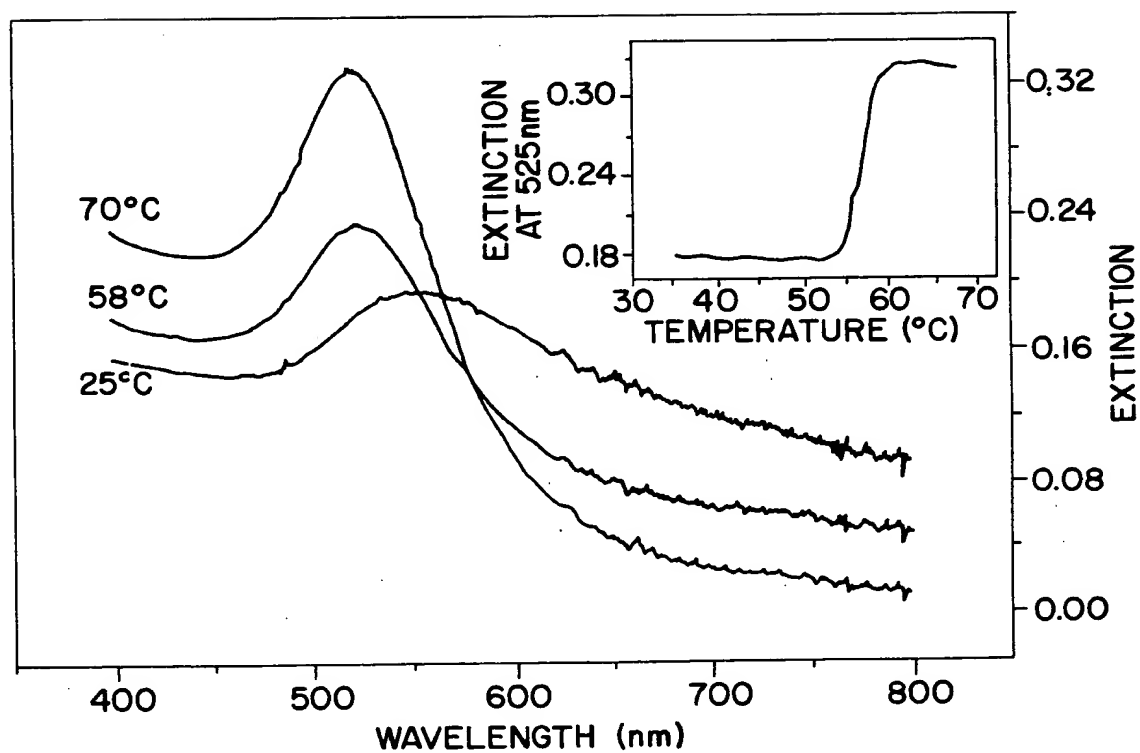
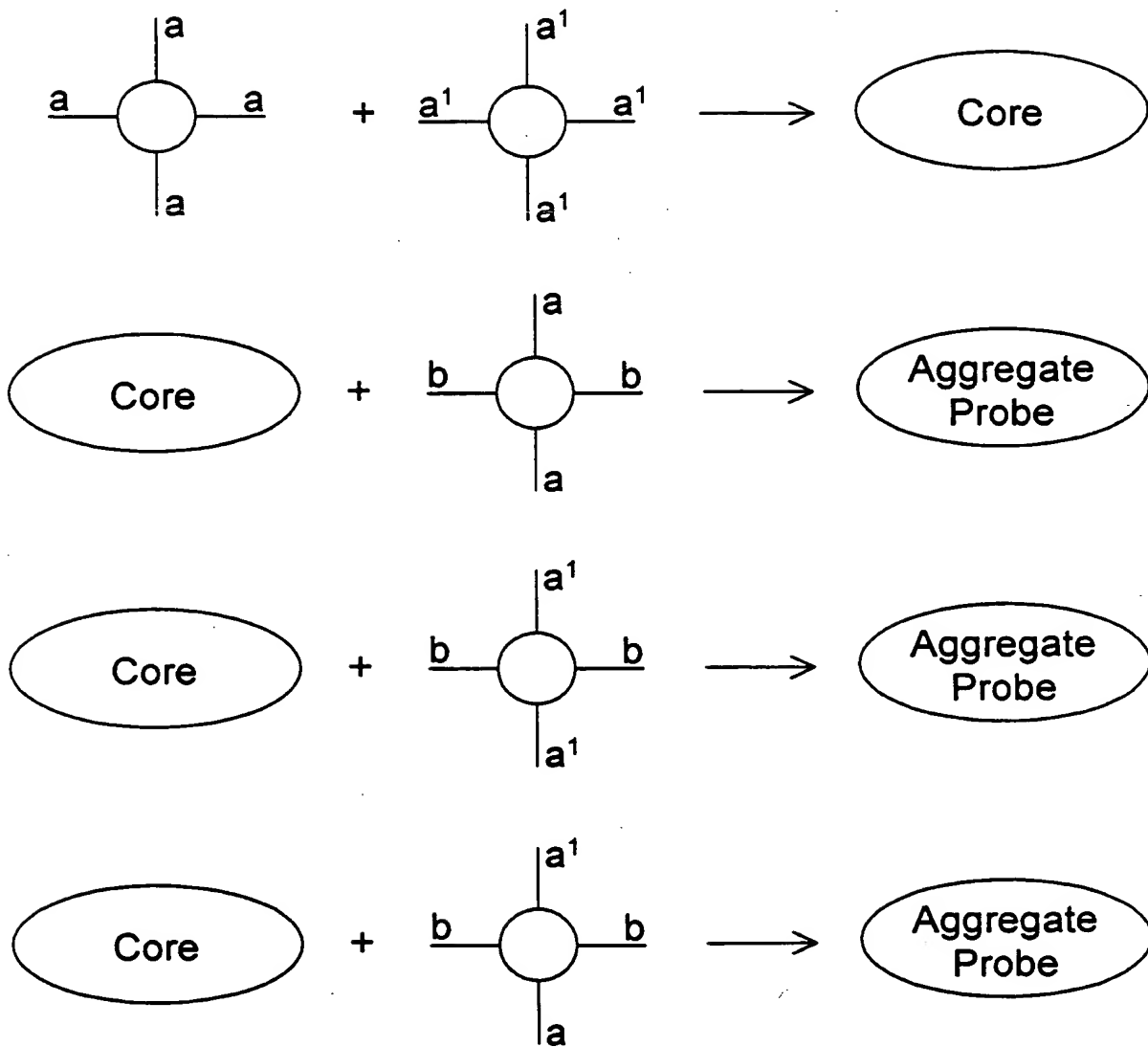


FIG. 28A



"Core" and "Aggregate Probe"

FIG. 28B

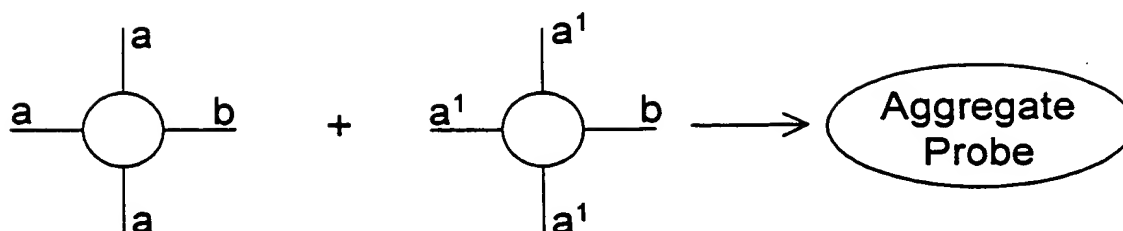


FIG. 28C

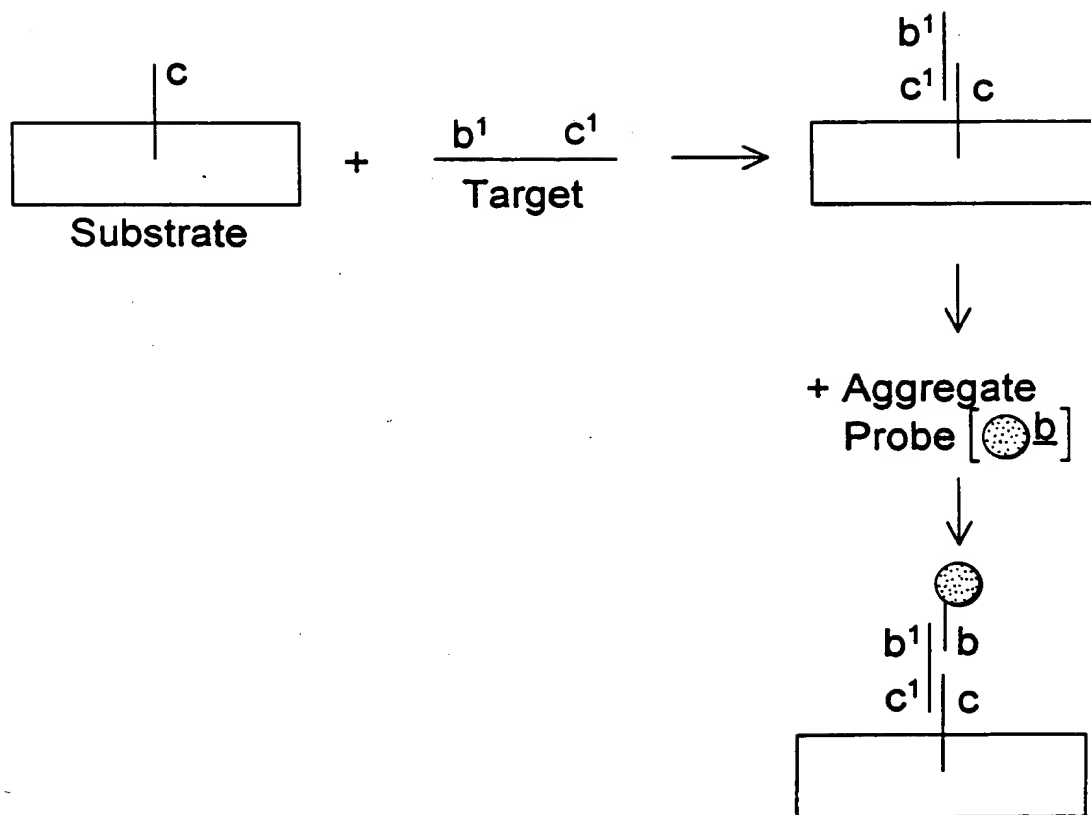


FIG. 28D

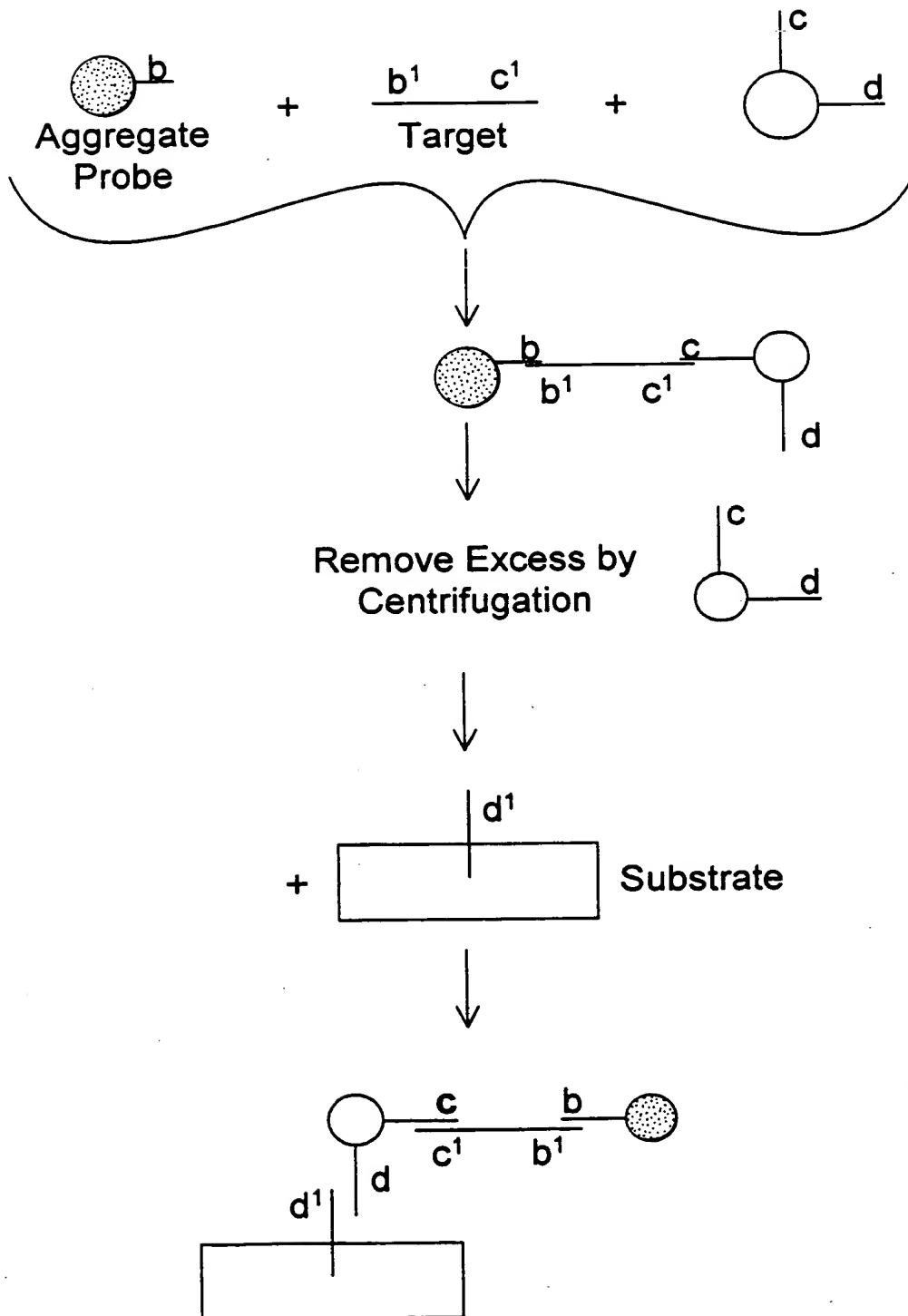
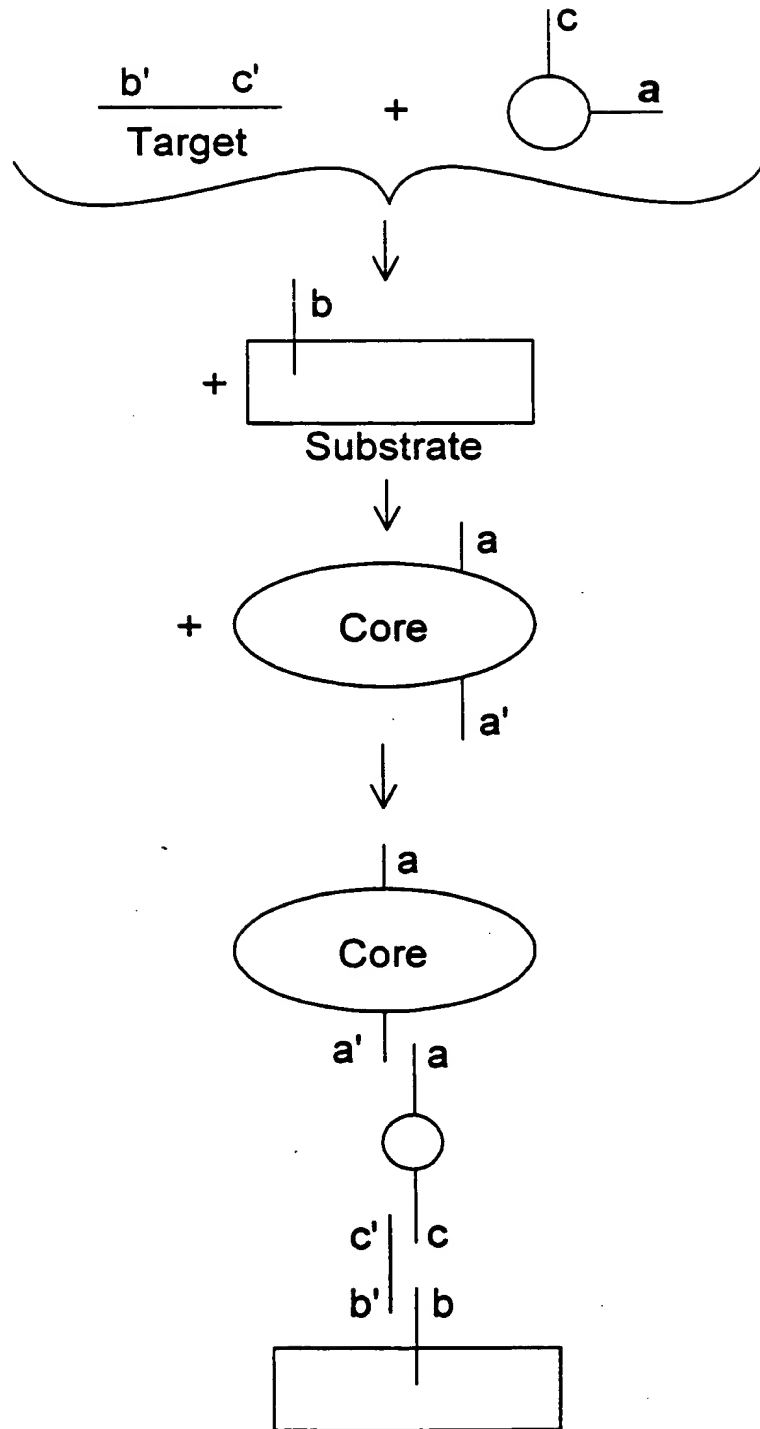
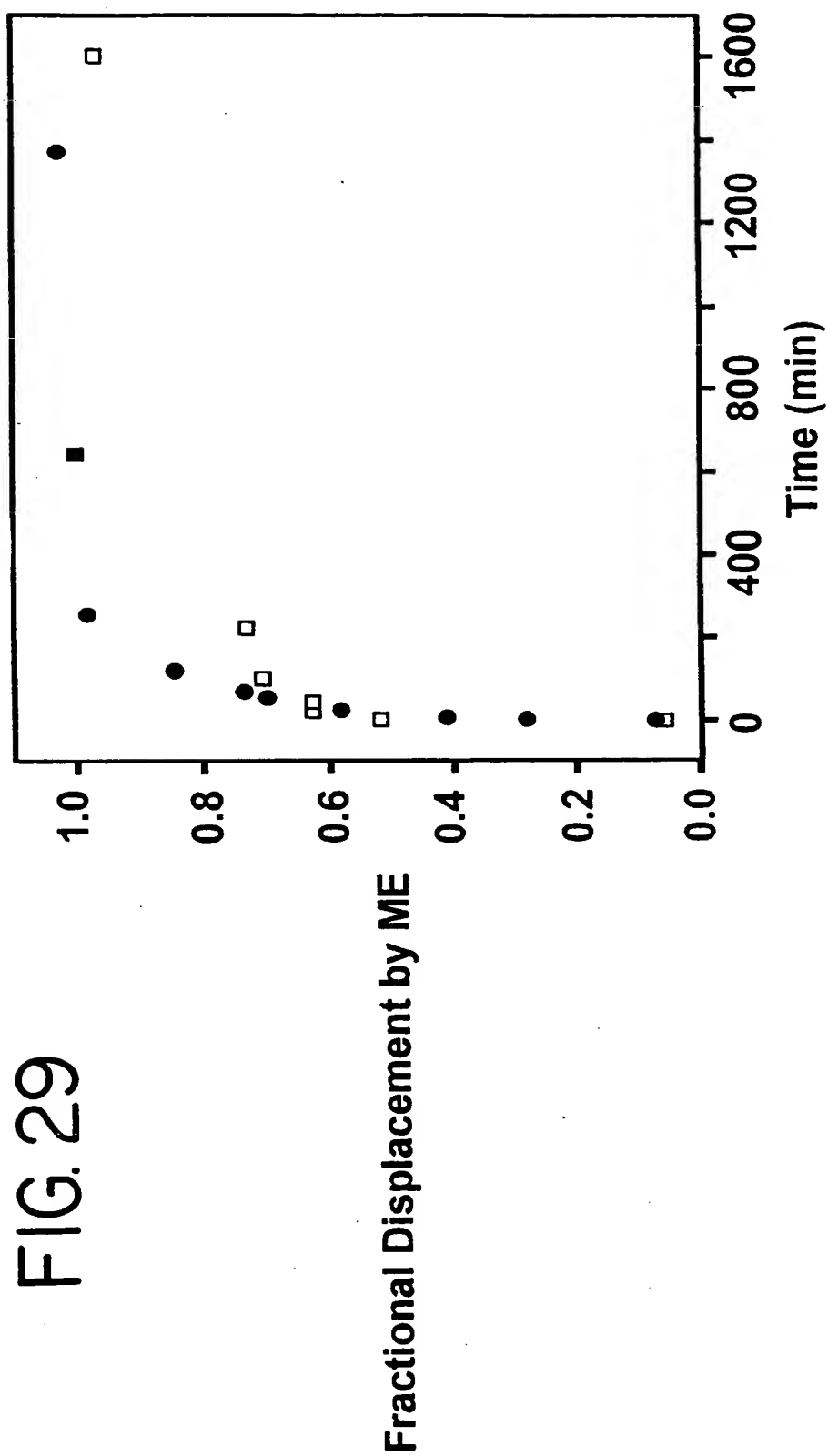
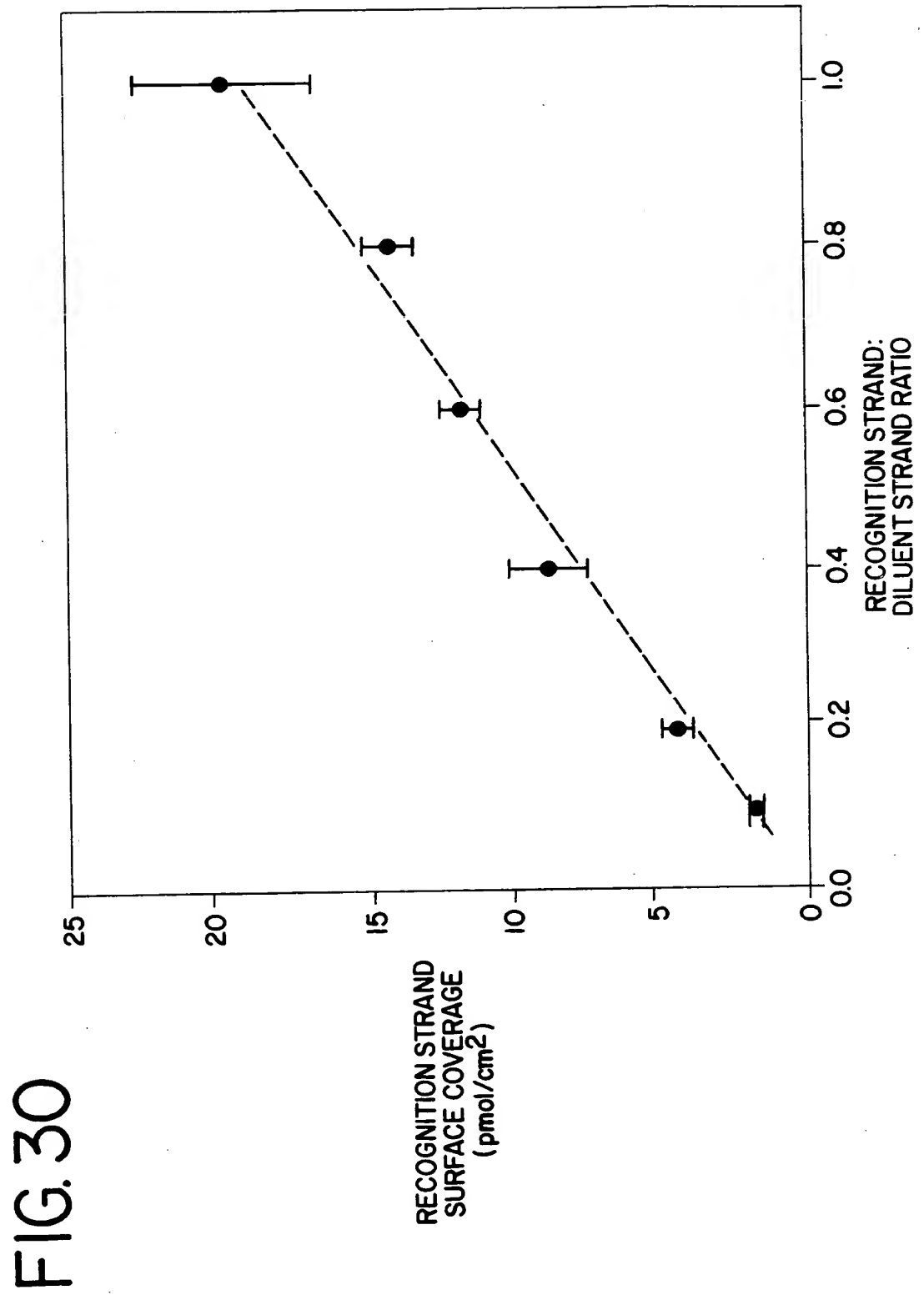


FIG. 28E







T00130 2/2/66

FIG. 31

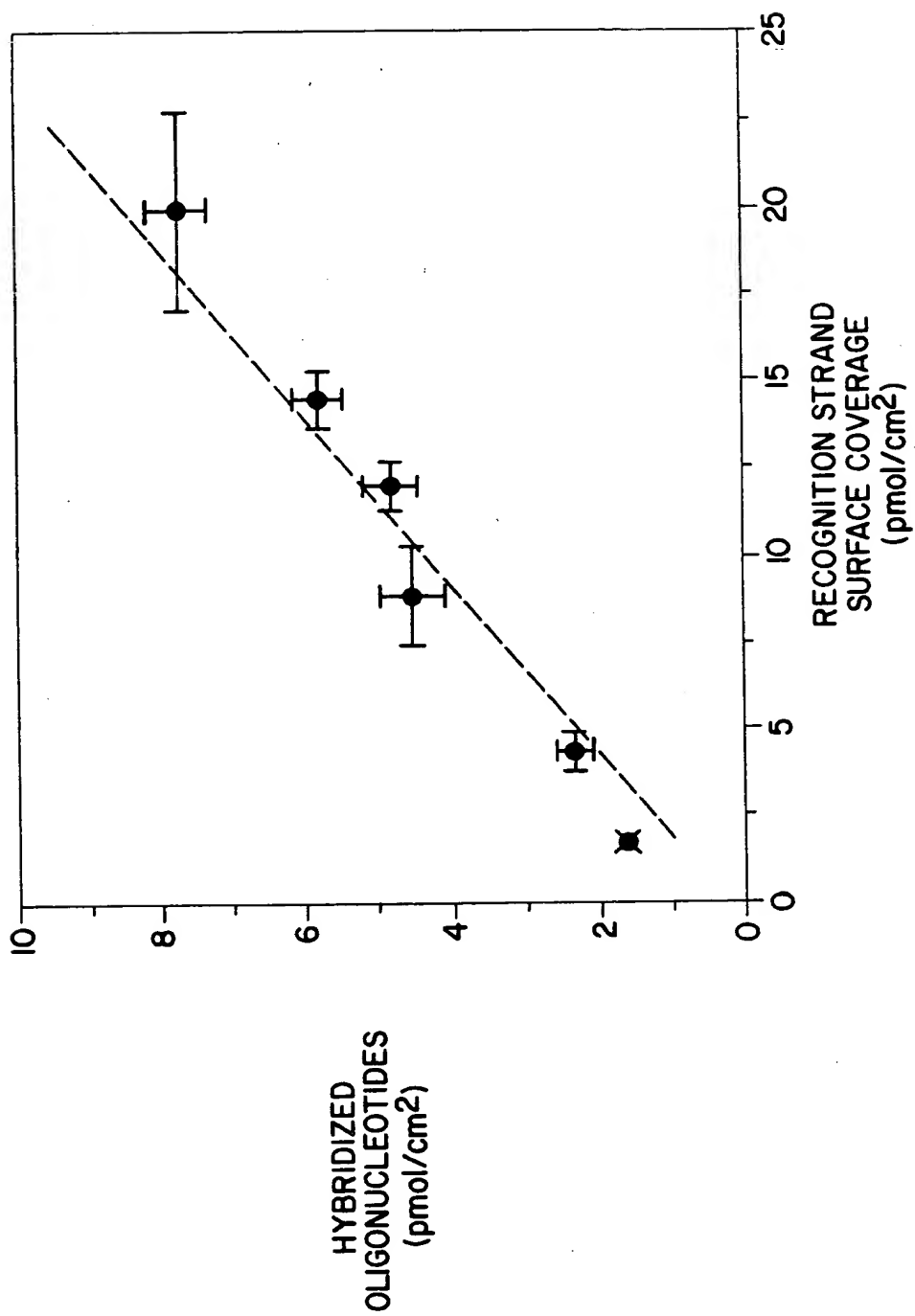


FIG. 33



A



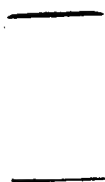
B



C



D



E



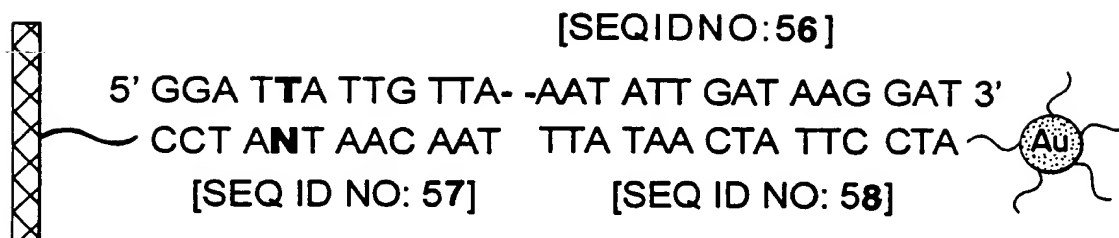
F



G

FIG. 33

FIG. 32



N = A (complementary),
G, C, T (mismatched)

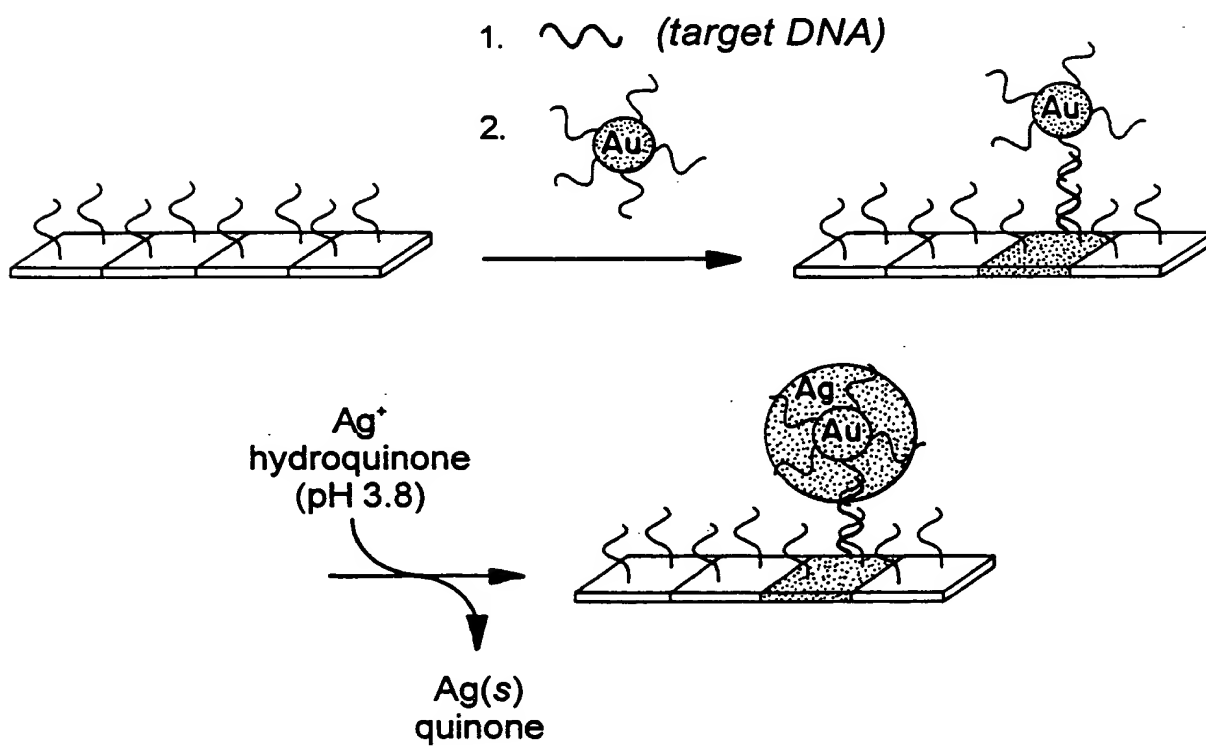


FIG. 34

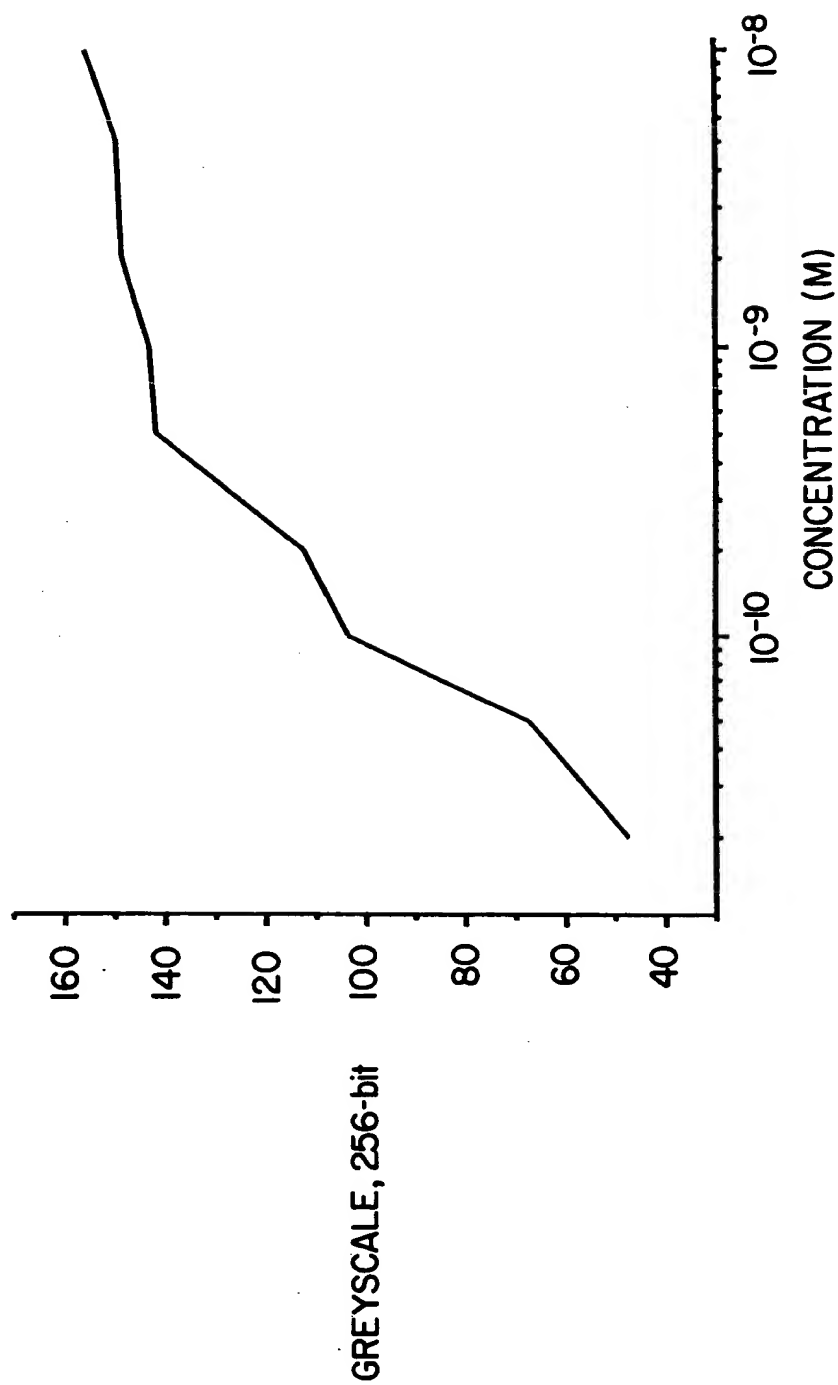


FIG.35A

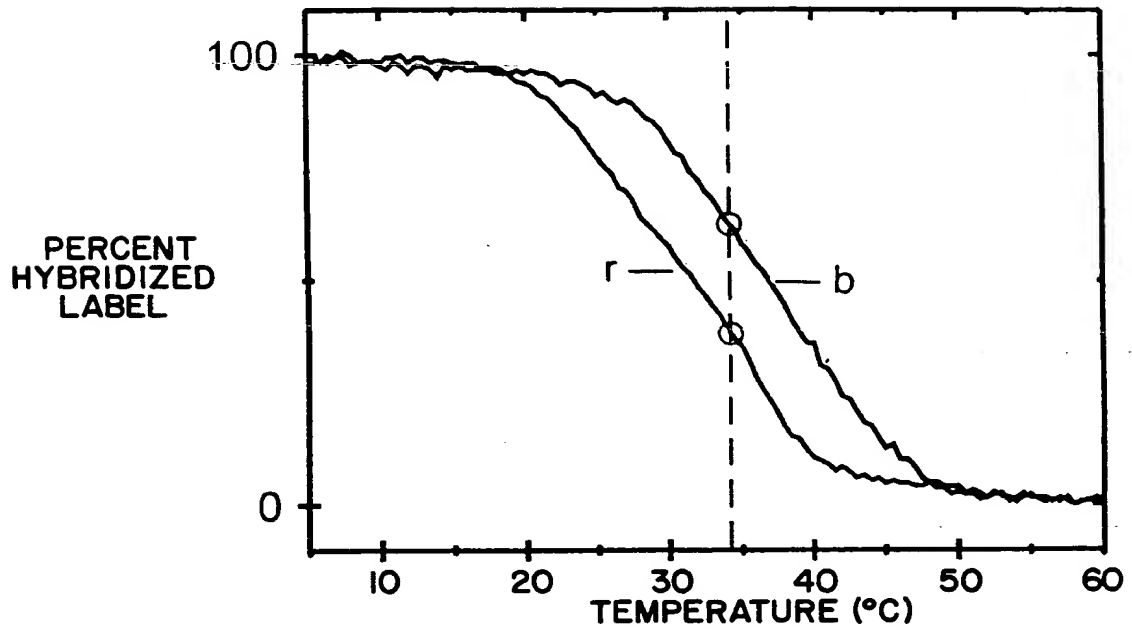


FIG.35B

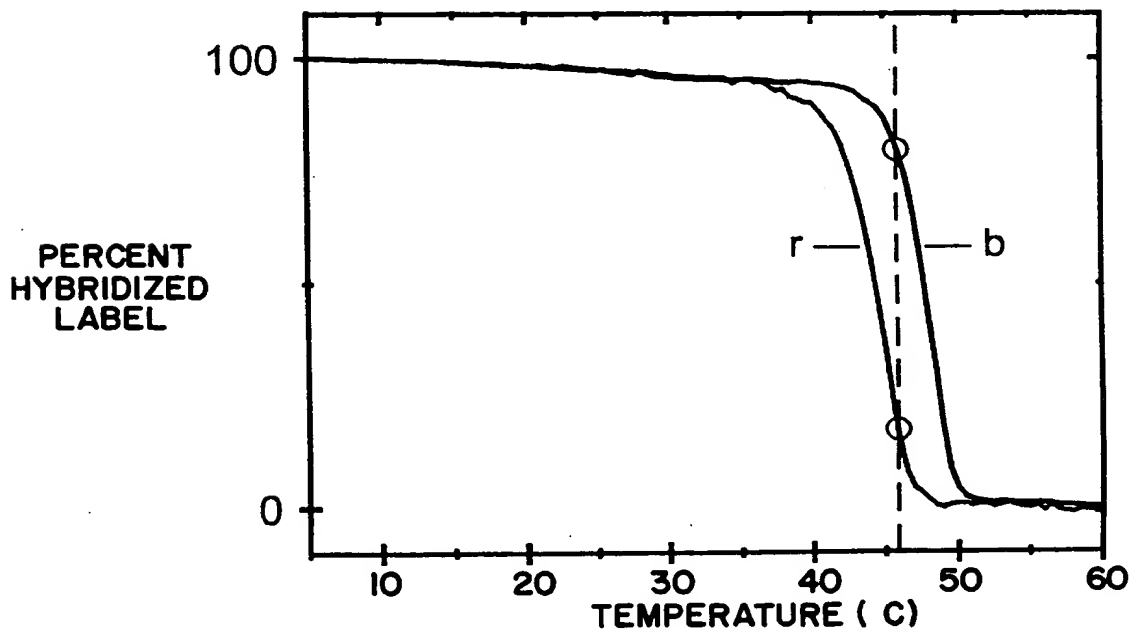


FIG. 36A

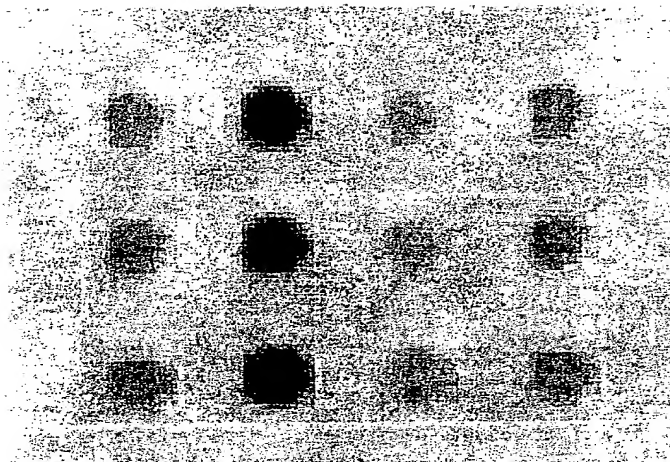
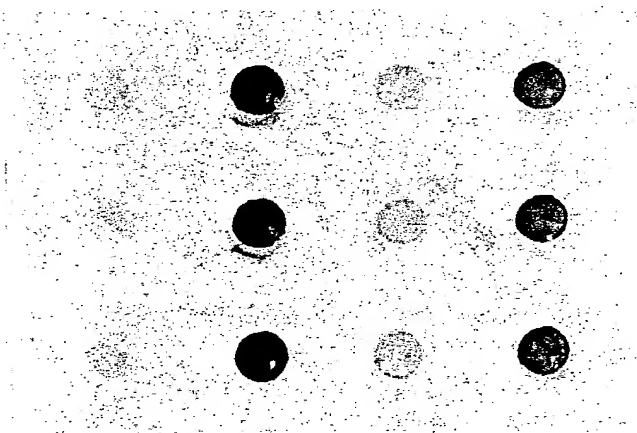


FIG. 36B



C A T G

09277-0001
199709-22/2369

FIG.37A

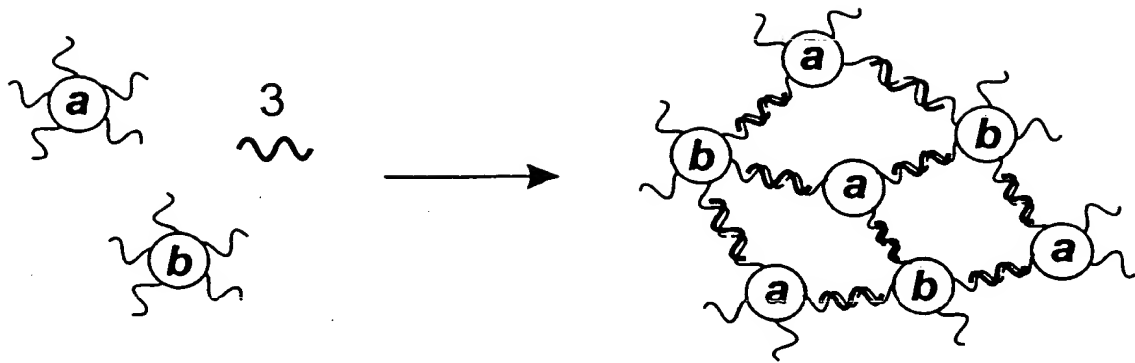


FIG.37B

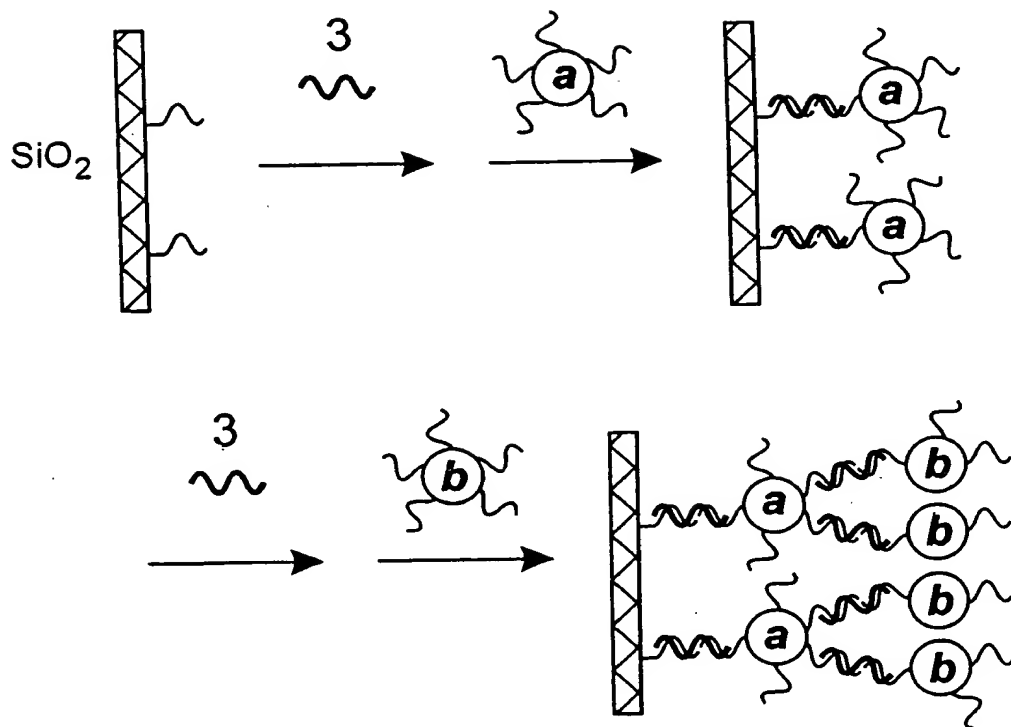


FIG.38A

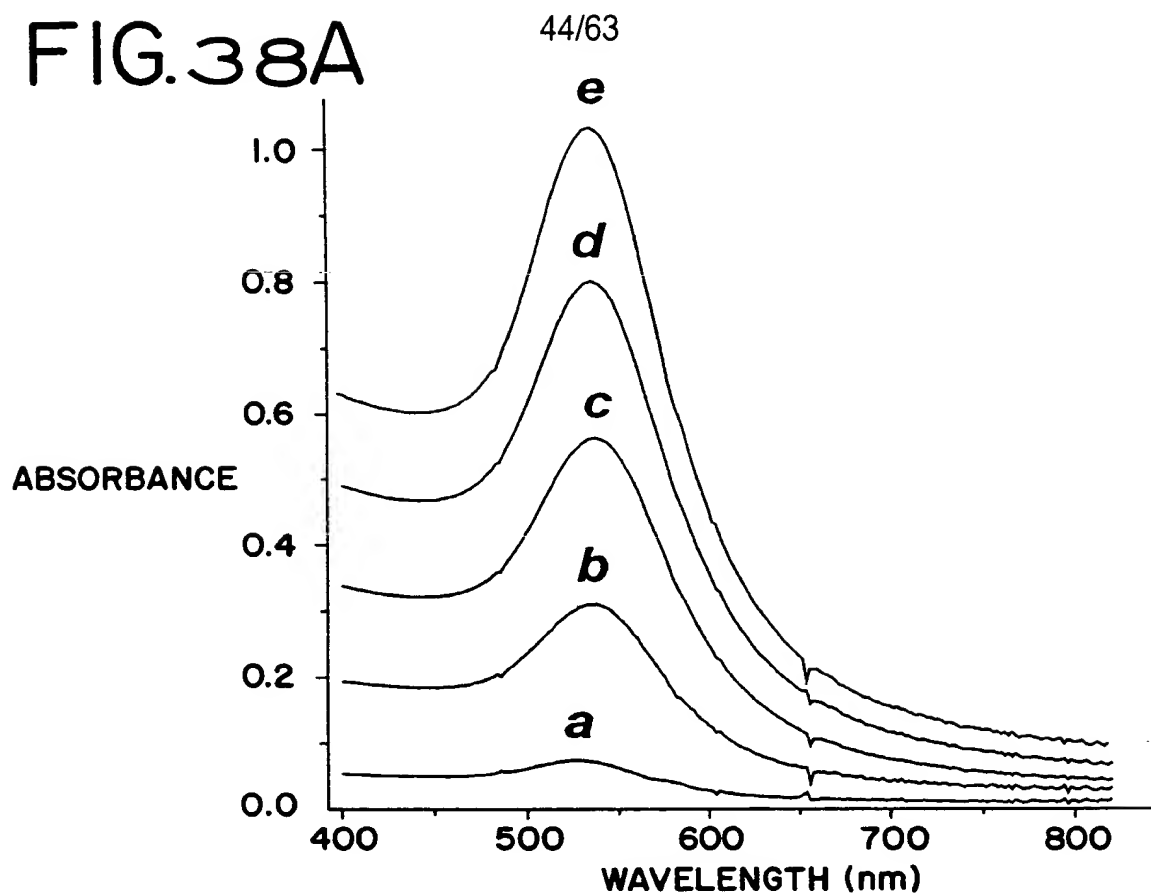


FIG.38B

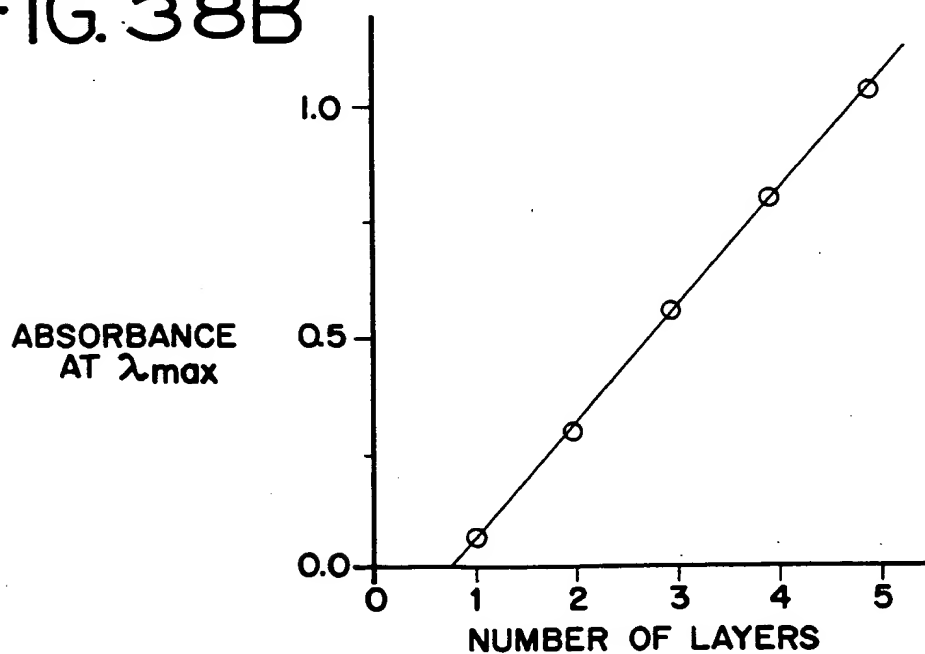


FIG. 39A

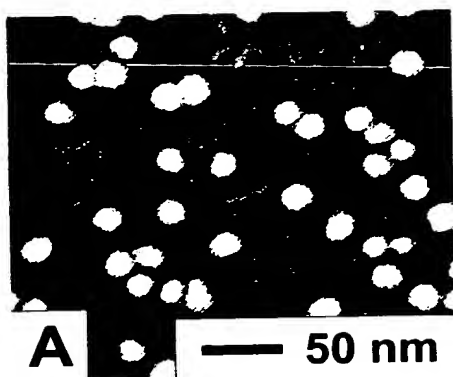


FIG. 39B

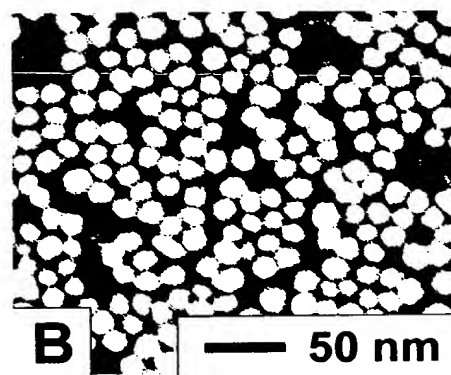


FIG.39C

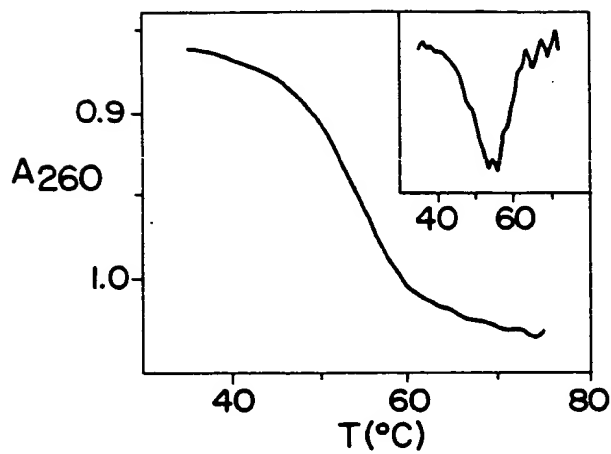


FIG.39D

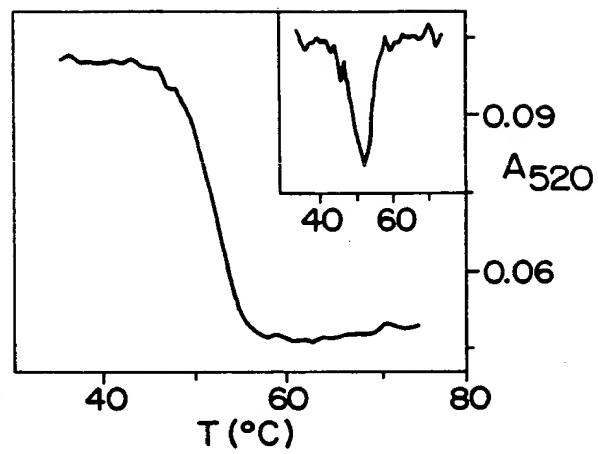


FIG.39E

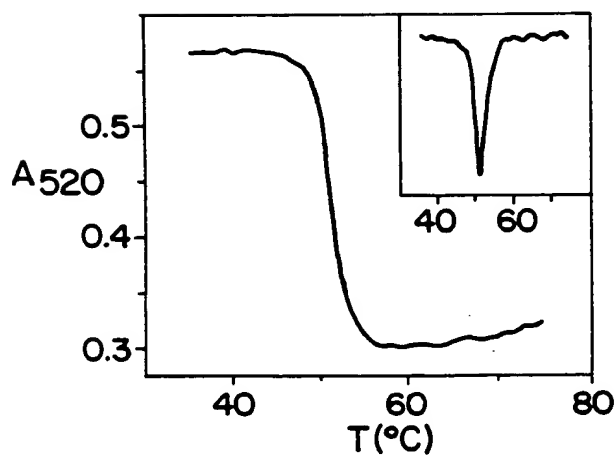


FIG.39F

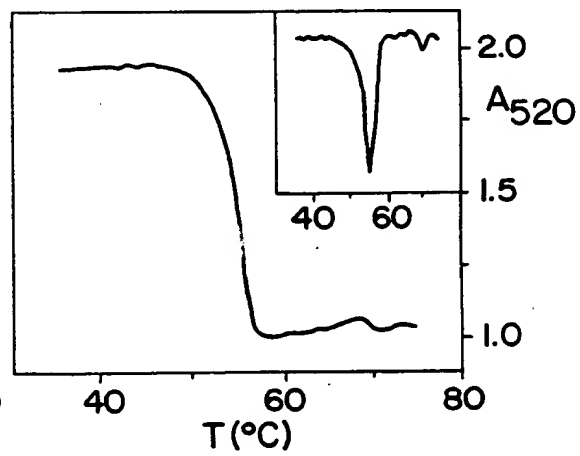


FIG. 40

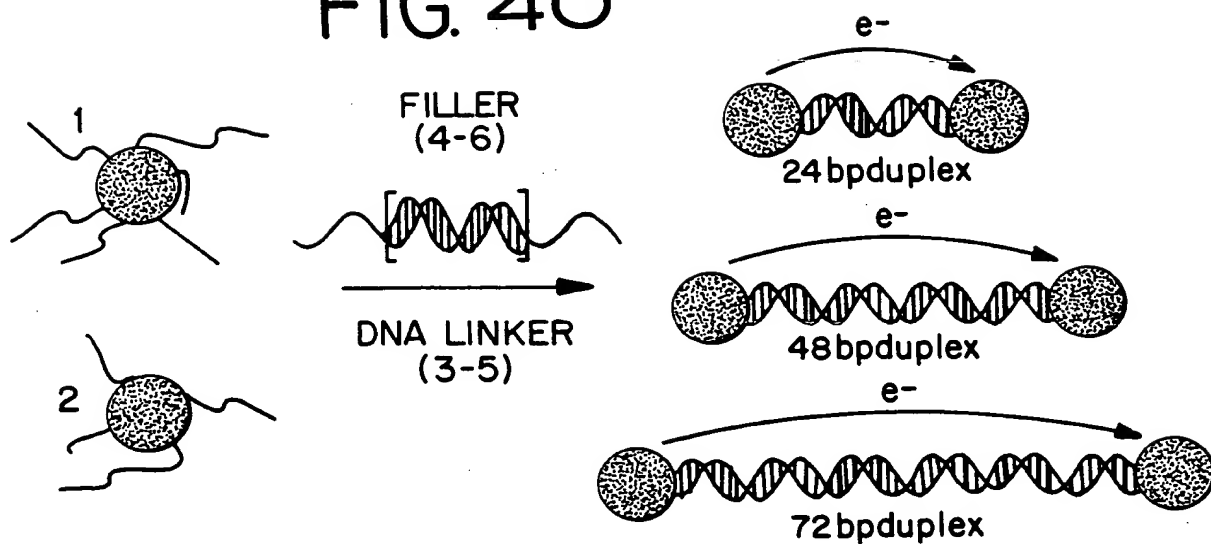


FIG. 41

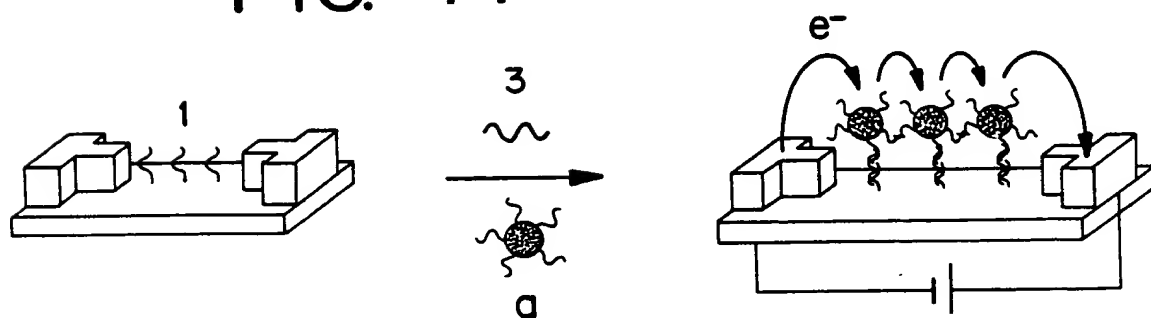
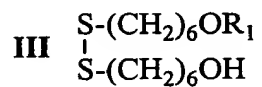
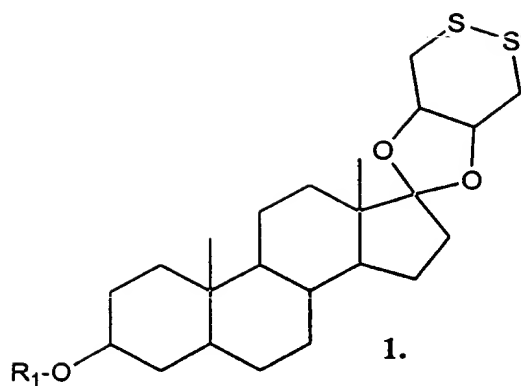


FIG. 42



R₁

a = H

b = (iPr)₂NP(OCH₂CH₂CN)-

c1 = 5'-p(A₂₀)-TATCGTTCCATCAGCT [SEQ ID NO: 65]

c2 = 5'-p(A₂₀)-TTGATCTTCCGTTCT [SEQ ID NO: 66]

Target I = 79-mer oligonucleotide with target region:

3'-.....ATAGCAAGGTAGTCGAGCAACTAGAAAGGCAAGA.....5'
[SEQ ID NO: 67]

FIG. 42

49/63

FIG. 43

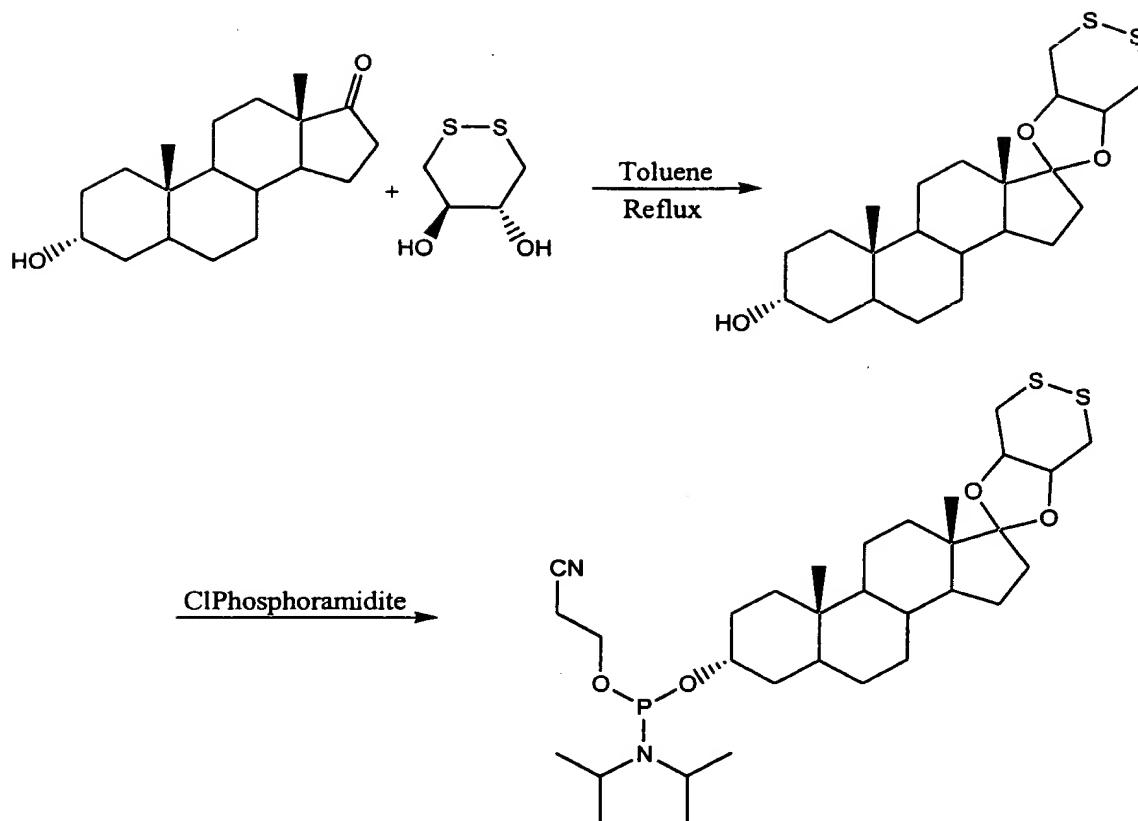
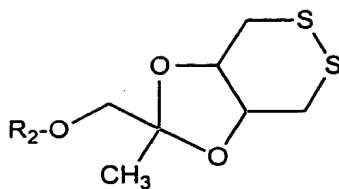


FIG. 43

FIG. 44



2.

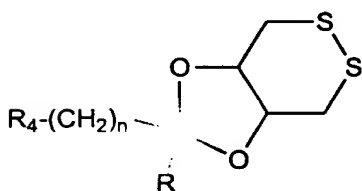
 R_2

a = H

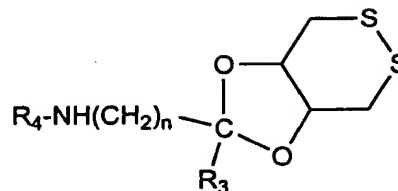
b = (iPr)₂NP(OCH₂CH₂CN)-c1 = 5'-p(A₂₀)-GCAGACCTCA [SEQ ID NO: 68]c2 = 5'-p(A₂₀)-CCTATGTGTCG [SEQ ID NO: 69]D = 5'-p(A₂₀) [SEQ ID NO: 70]

Target I = 63-mer oligonucleotide with target region:

3'-.....CGTCTGGAGTGGATACACAGC.....5'
[SEQ ID NO: 71]



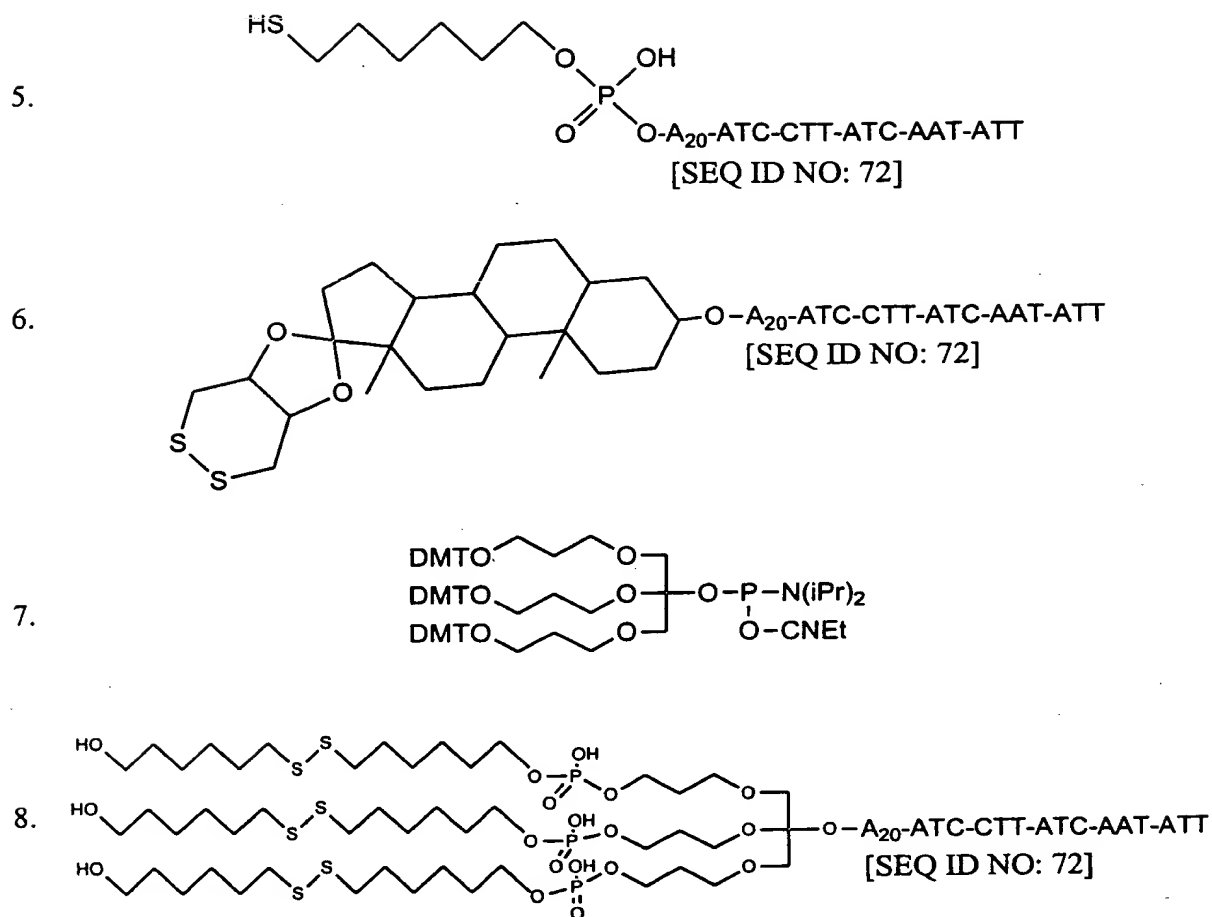
3.



4.

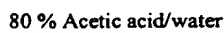
 R_3 = hydrogen, an alkyl group, an aryl group, or a substituted alkyl or aryl group R_4 = an attached oligonucleotide or modified oligonucleotide

FIG. 45



55377-0404
T00T00"444555

52/63



DTT solution

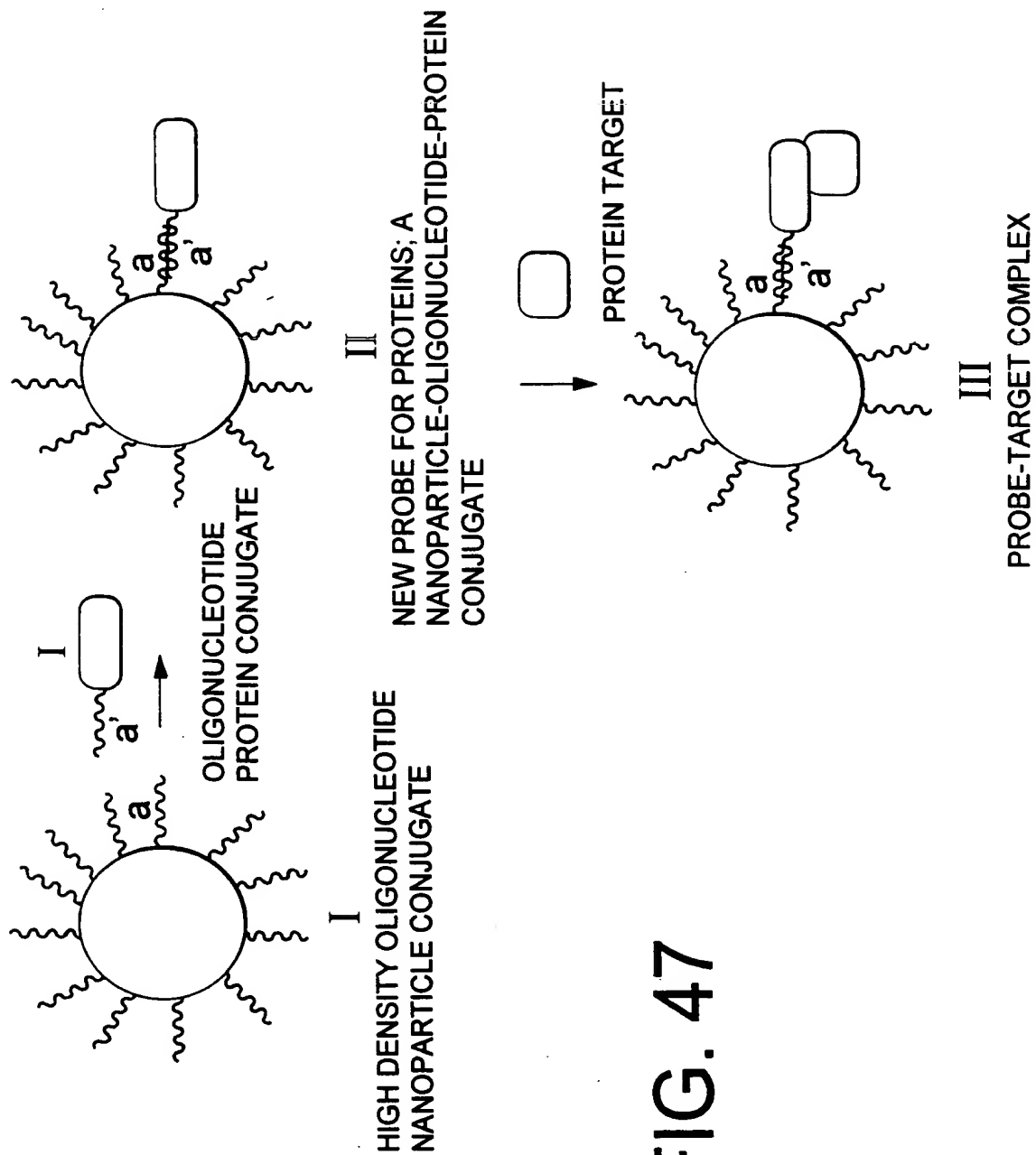
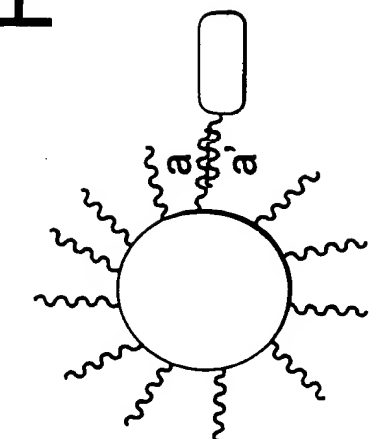


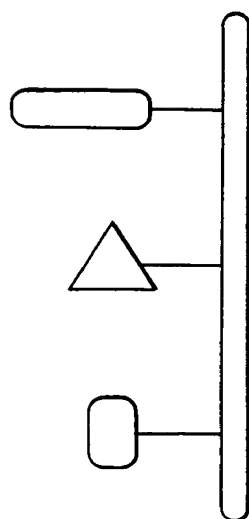
FIG. 47

FIG. 48



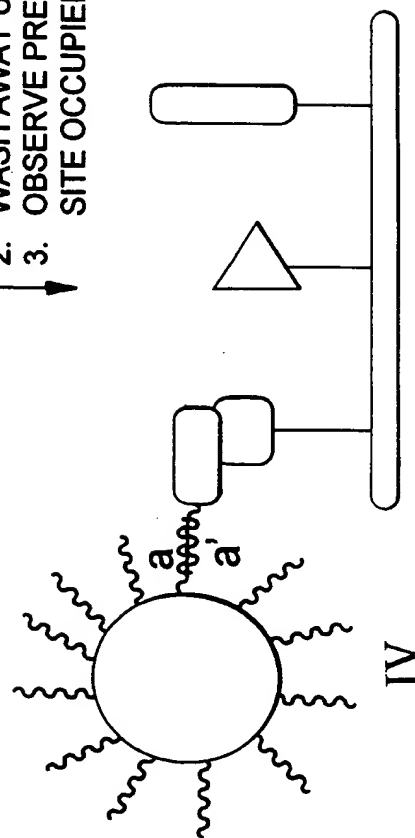
II

NEW PROBE FOR PROTEINS; A
NANOPARTICLE-OLIGONUCLEOTIDE-PROTEIN
CONJUGATE

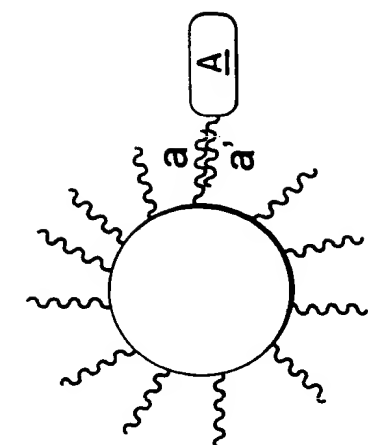


GLASS PLATE WITH THREE DIFFERENT PROTEINS
IMMOBILIZED ON THE SURFACE, ONE OF WHICH
BINDS TO THE PROTEIN IN PROBE II

1. EXPOSE PLATE TO THE PROBE SOLUTION
2. WASH AWAY UNBOUND NANOPARTICLE PROBE
3. OBSERVE PRESENCE OF BOUND NANOPARTICLES AT
SITE OCCUPIED BY THE FIRST PROTEIN IN THE SERIES.

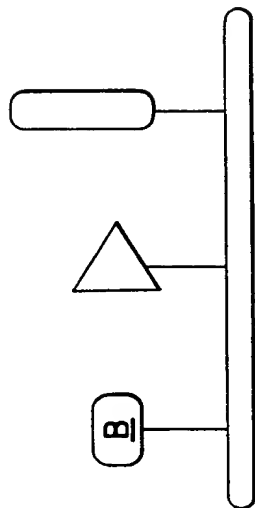


IV

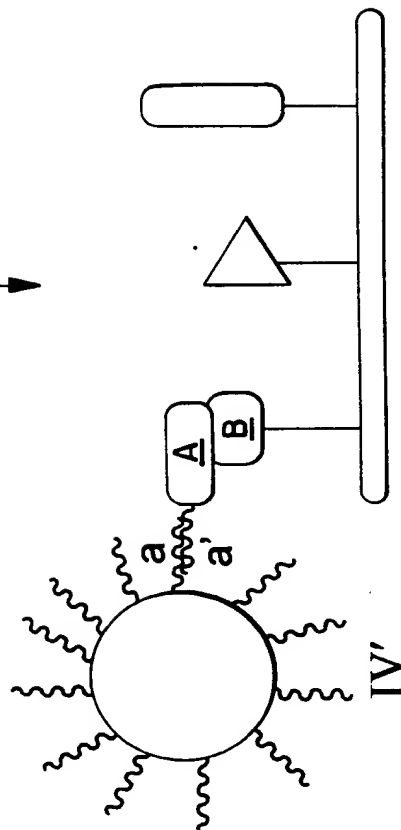


II'

NANOPARTICLE-OLIGONUCLEOTIDE-RECEPTOR



GLASS PLATE WITH THREE DIFFERENT SUBSTANCES
IMMOBILIZED ON THE SURFACE, ONE OF WHICH (B)
BINDS TO THE RECEPTOR UNIT (A) IN II'.



IV'

FIG. 49

FIG. 50A

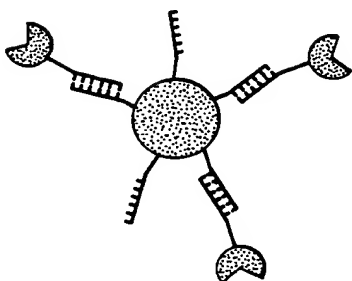


FIG. 50B

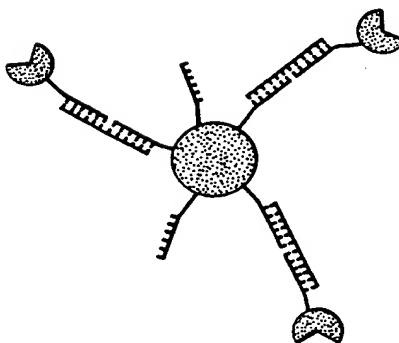


FIG. 51A

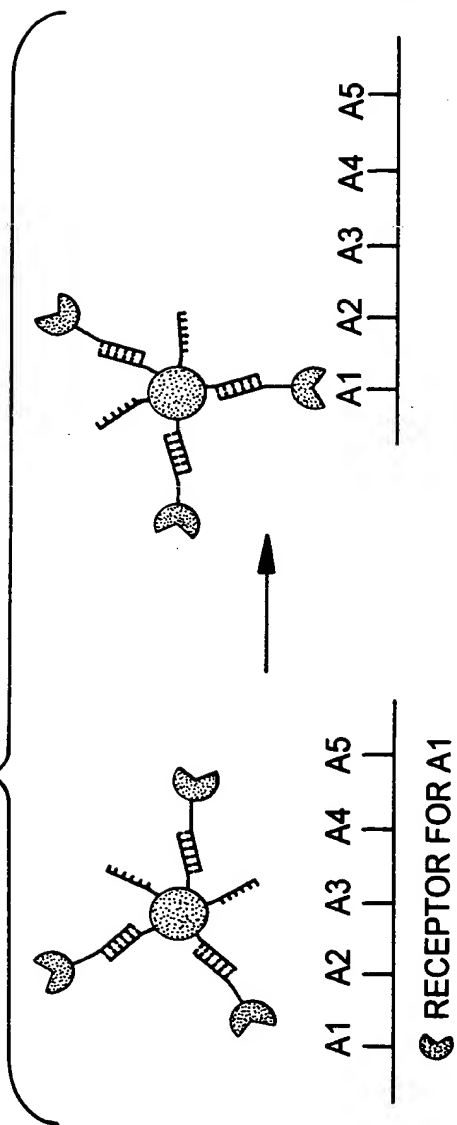


FIG. 51B

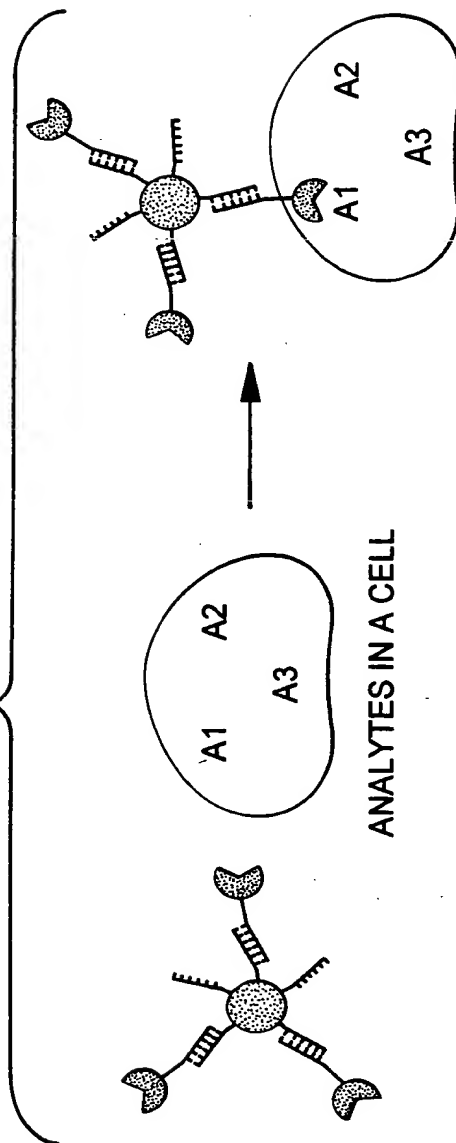


FIG. 52A

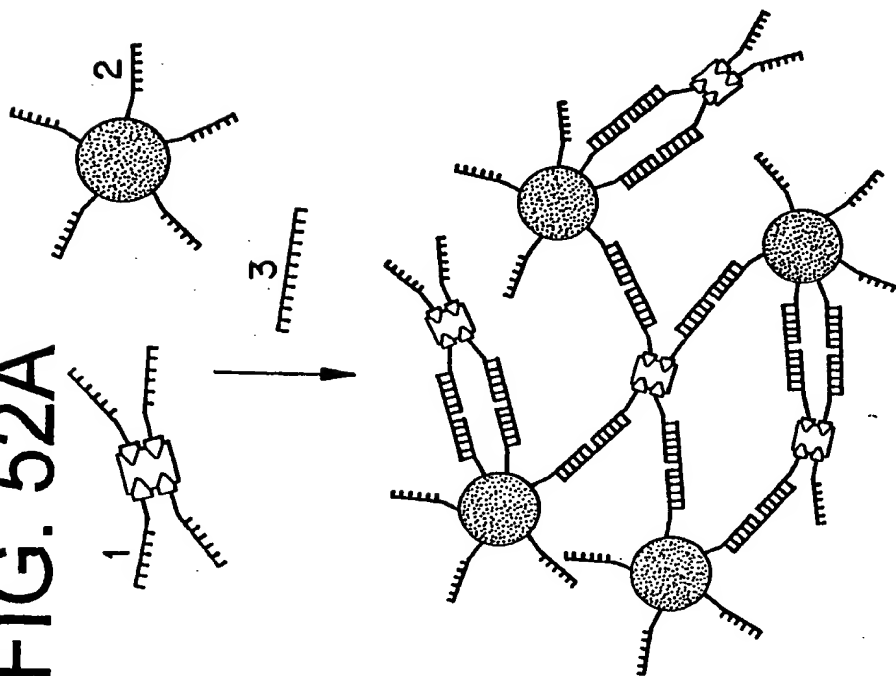
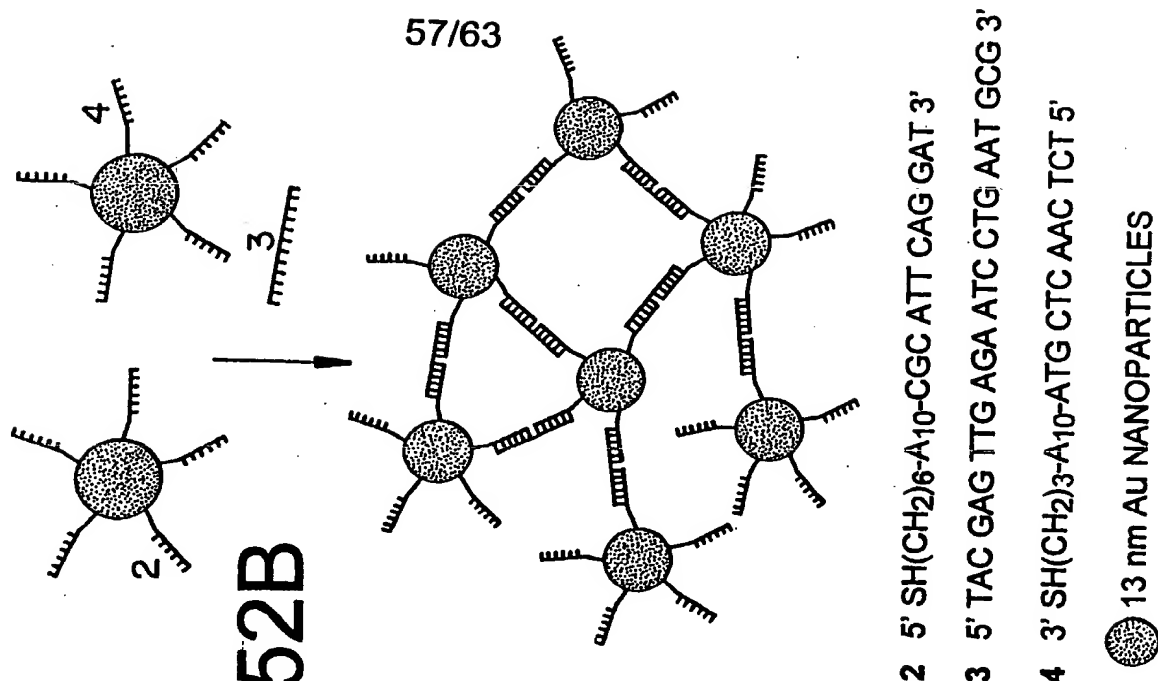


FIG. 52B



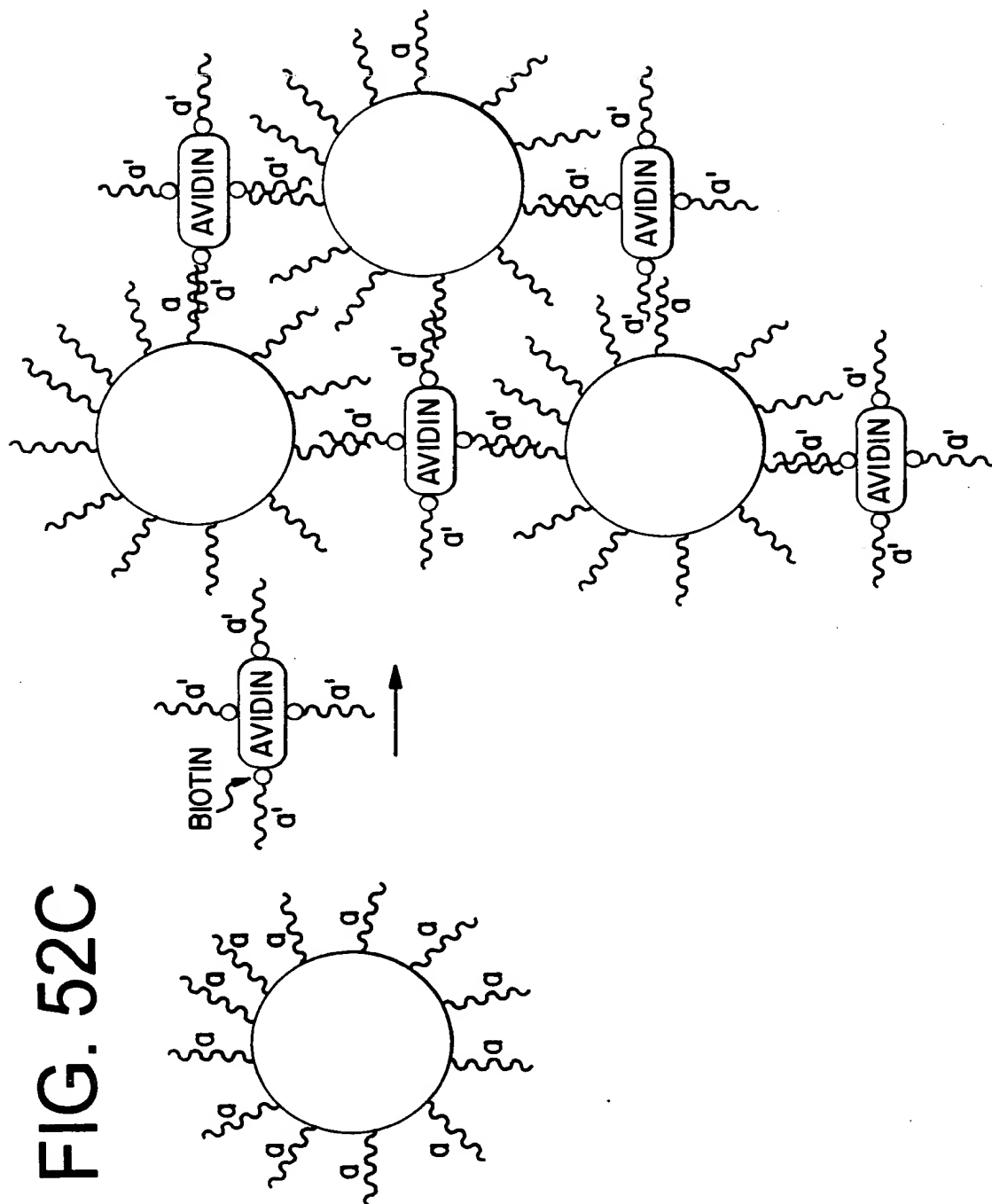


FIG. 53

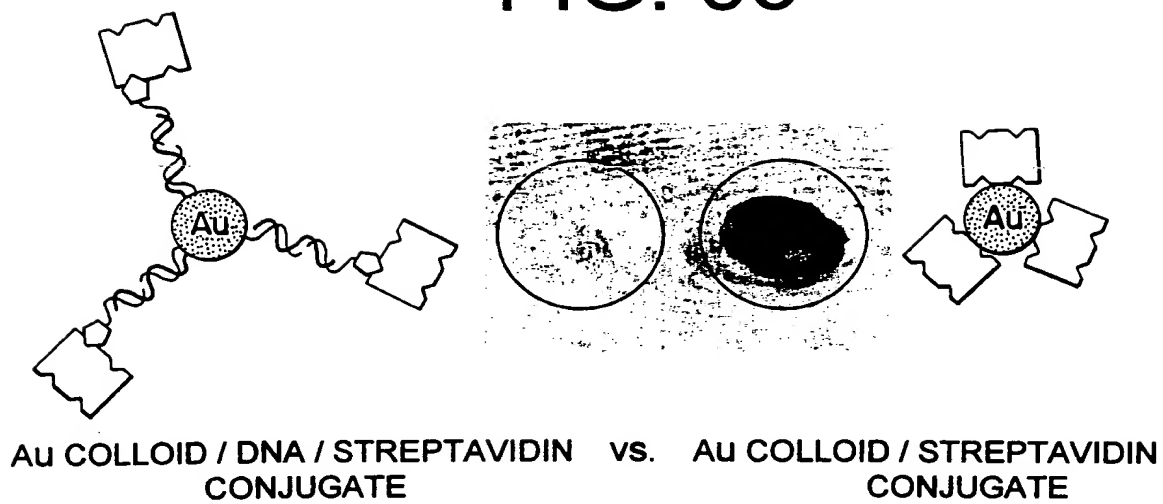


FIG. 54

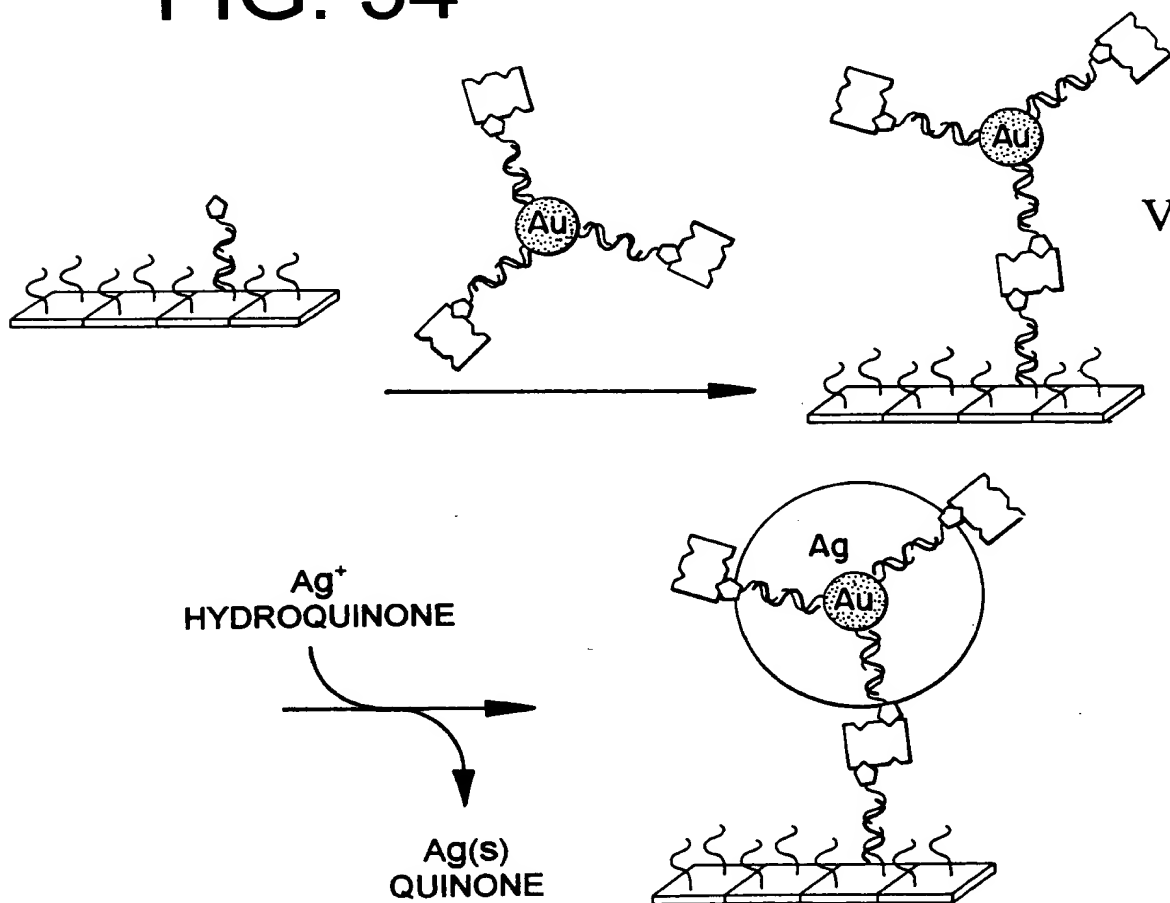


FIG. 55

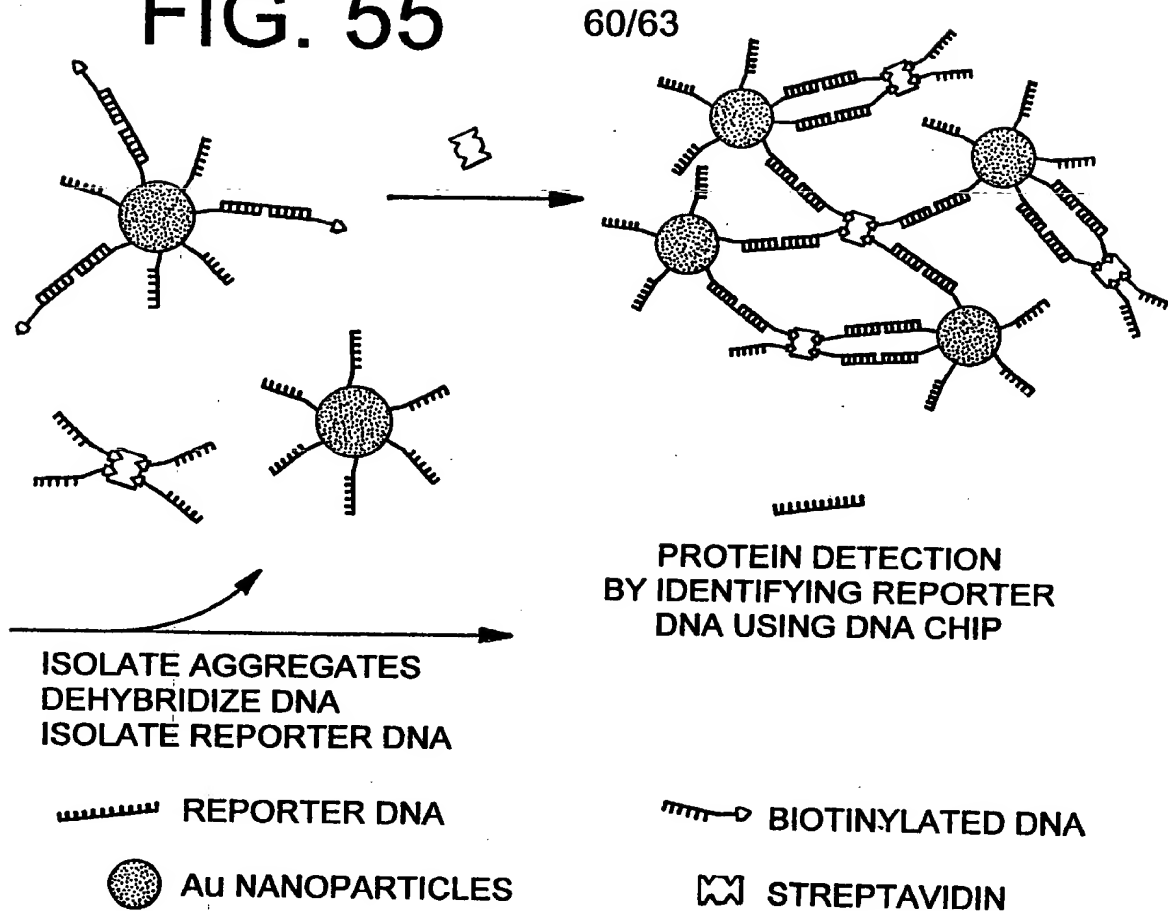


FIG. 56

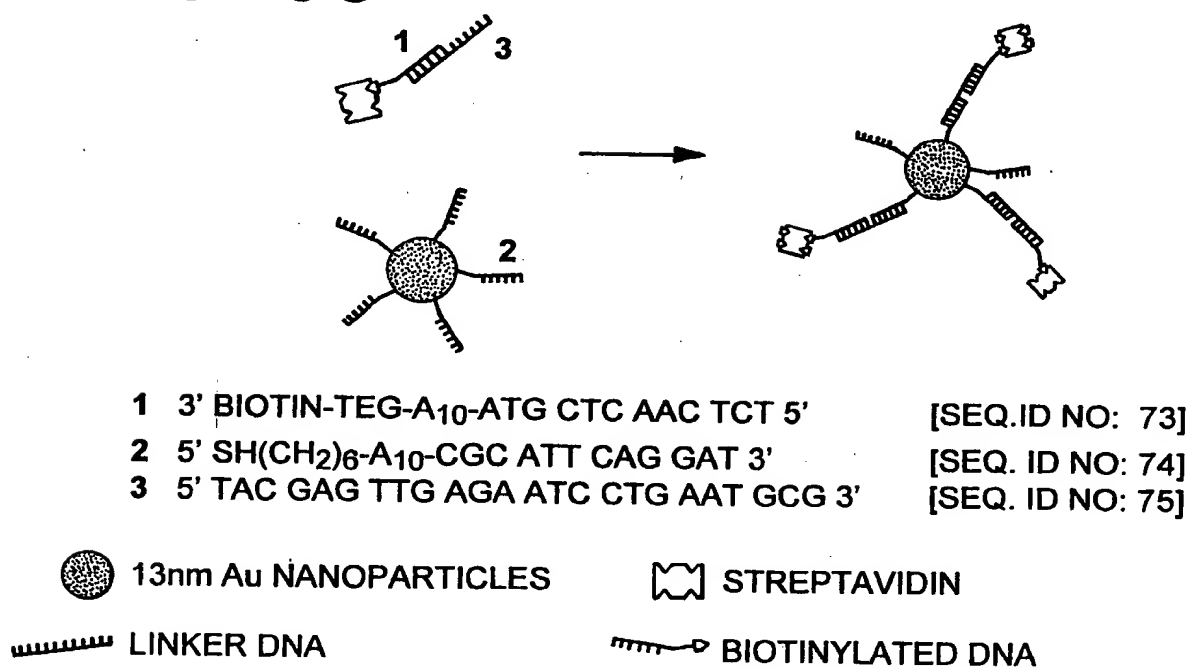


FIG. 57A

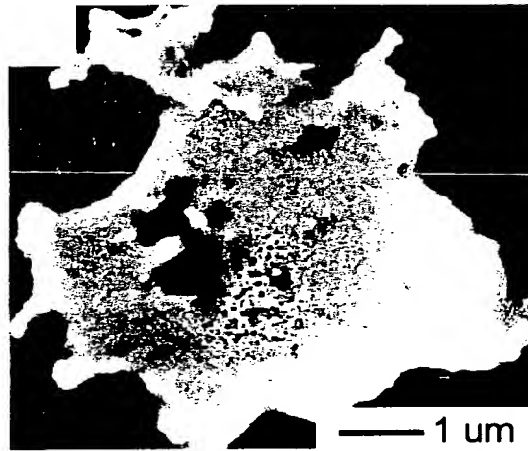


FIG. 57B

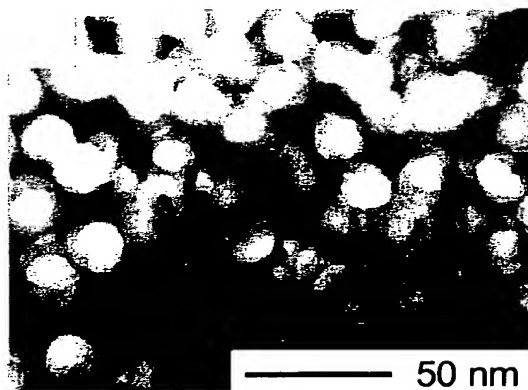


FIG. 58A

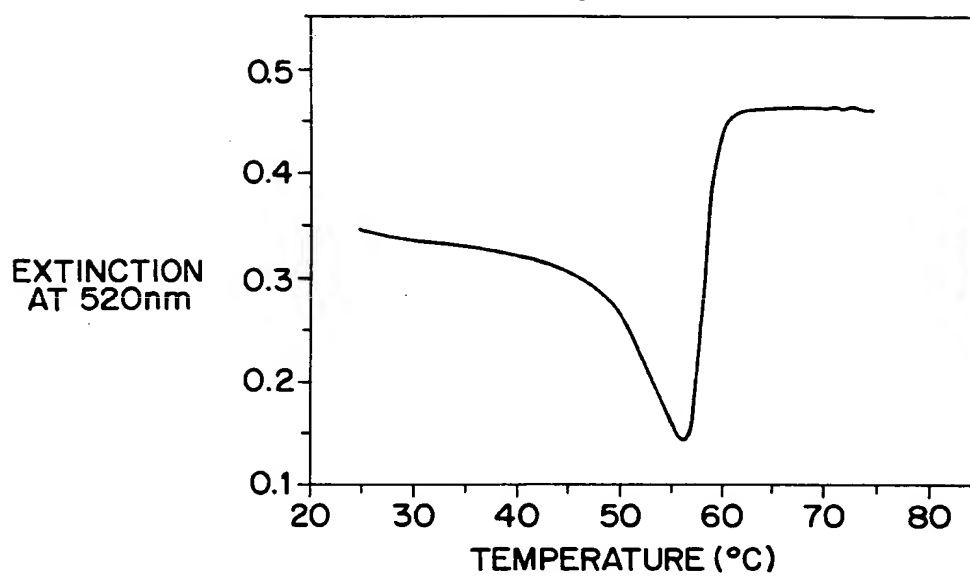


FIG. 58B

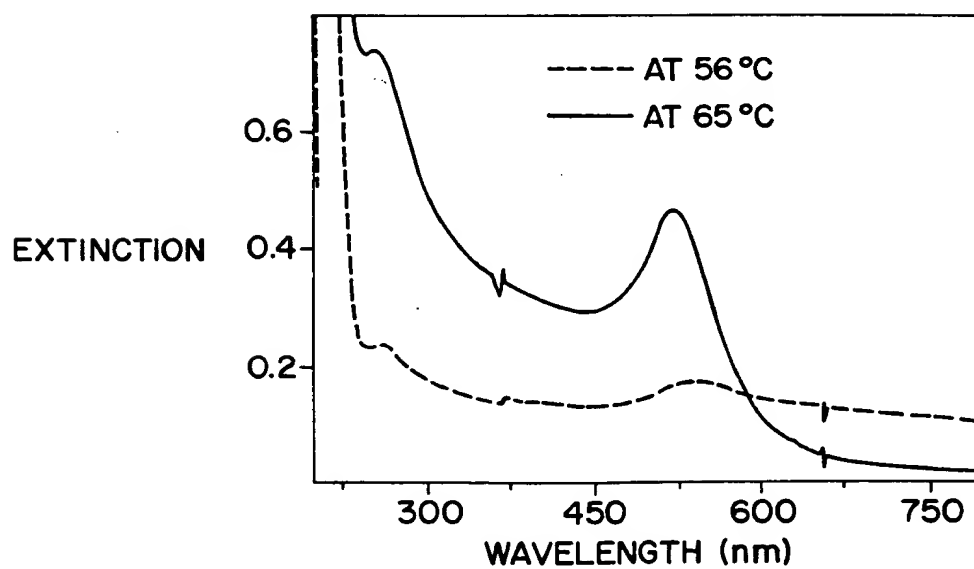


FIG. 59

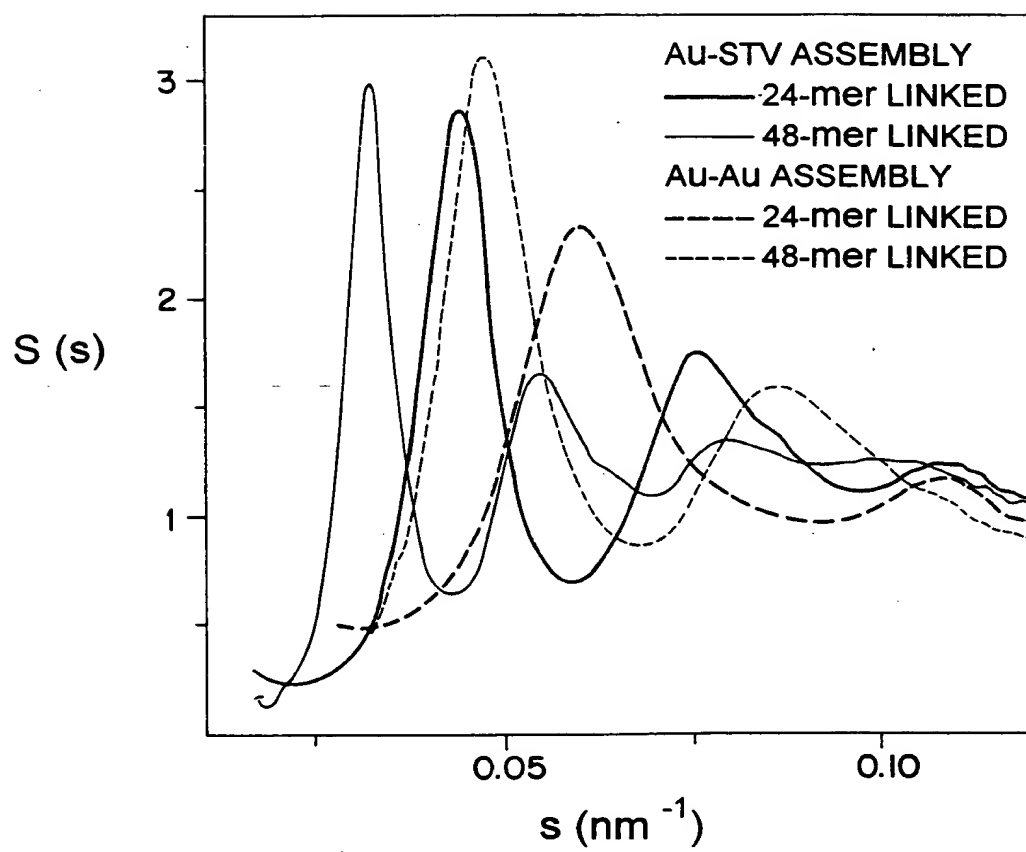


Figure 60

Scheme 1

